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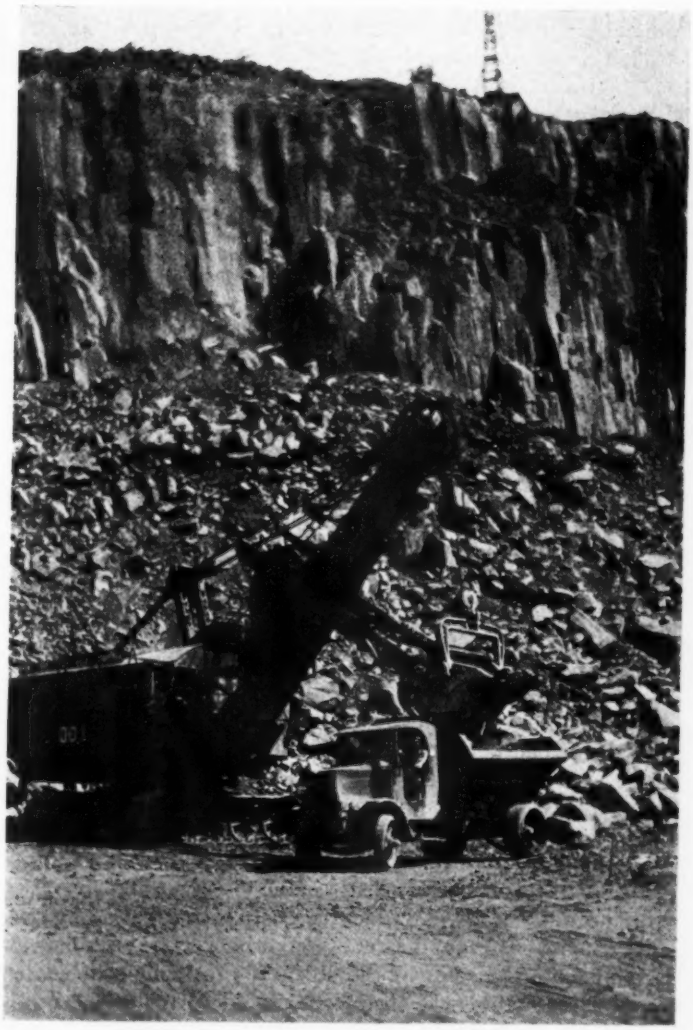
Making Little Ones out of Big Ones in MODERN MANNER

Join us in a trip through the Haverstraw Quarry of New York Trap Rock Corporation.

By Spencer A. Jones

TRAVELERS up and down the Hudson River would never guess that one of the high, rocky hills on the west bank, a mile or so south of Haverstraw, New York, is being made into the greatest movie set in the world. The entire back of this huge hill of columnar basalt, the same geological structure as the famous Hudson Palisades, is being blasted away to be used for building roads and other structural purposes. Yet the easterly front of this hill, facing the four-mile width of the Hudson, is and will be left unmarred by the hand of man. Not a trace of the quarry operations is visible from the river.



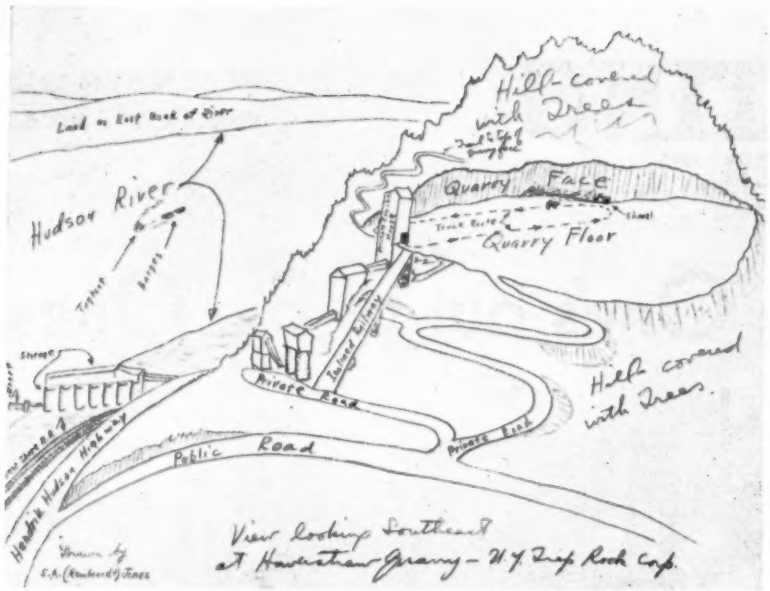
Two dippers to a truckload; fifty truckloads an hour; one and three-quarter tons to the cubic yard, loose; three yards, and then some, to the dipperful; ten and one-half tons to the truckload. To be sure the shovel is a 100-B Bucyrus-Erie, the trucks are 7½-ton AC Macks, and the quarry floor is better than some boulevards.

Thank You, Mr. Tomkins

Through the courtesy of Sterling Tomkins, Vice President of the New York Trap Rock Corporation, owners and operators of the quarry, we are permitted to watch the work going on. Sterling Tomkins, as most quarrymen know, is probably one of the most experienced and progressive stone producers in the country. The Tomkins family has been in the business for more than seventy-five years, and it was under the personal direction of Sterling Tomkins that the Haverstraw quarry plant was designed and constructed.

We drive along the magnificent Hendrick Hudson Drive on the west bank of the river. The wide con-

EDITOR'S NOTE: Another article by the same author describing the Clinton Point quarry of the New York Trap Rock Corporation will appear in an early issue.



This pencil sketch by the author was intended for the editor's personal information. We found it so helpful in following the written description of the quarry that we reproduce it here . . . just as sketched by S. A. "Rembrandt" Jones.

crete highway, winding around and carved out of the rocky hills, is many feet above the level of the water. The air is misty and we can hardly see across the four-mile width of river. Just south of Haverstraw we see below us, extending down across the West Shore railroad tracks to the river, a long row of great circular concrete storage silos. From under the highway comes the housing of a conveyor belt, which connects with the screen housings over the silos. A seemingly microscopic tugboat is towing a couple of empty barges up to a loading wharf in the dim distance. But where's the quarry?

How About a Little Mountain Climbing?

We turn off the highway to the west and climb up a steep road between vertical walls of columnar basalt, commonly called trap rock, through which the roadway has been blasted. After a couple of hundred yards the grade flattens out, but we aren't to the top yet. Instead, we turn off this road to the south and start climbing again. The thudding, grinding roar of giant crushers reaches our ears. More concrete silos, and a rectangular concrete bin, are perched on the side of the steep hill at our left. An apparently unused inclined railway stretches up to the top of the hill—what a swell ski-slide it would make!

A Quarry Floor Like a Boulevard

The road becomes steeper. We drop back into low gear and crawl around a couple of hairpin turns. Signs beside the road warn us that when the siren sounds, a blast is about to be fired. We approach the top of the grade and see a sign which announces that no cars are permitted to pass beyond this point. Being privileged characters, we ignore the sign, and find ourselves, suddenly, on the quarry floor.

And what a floor! Smooth as a well-built macadam highway! Two thousand feet long and a thousand feet wide; perfectly drained; and a magnificent view to the north, west and south. On the east is the quarry face, the back of the movie set, a towering, jagged row of vertical crystals of trap rock nearly half a mile long and some of it one hundred and sixty feet high.

Outlined against the eastern sky at the top of the columnar cliff are the spindly derricks of well drills. At the base of the cliff are great slopes of broken rock. Dwarfed by the immensity of their surroundings, electric shovels nibble away at the bottoms of the slopes and drop their bites into impatient trucks which scurry away, vanish into a noise-filled building, and emerge again, empty, to hustle back to the shovels.

A staccato rat-tat-tat is audible above the throbbing crunch-crunch-crunch of rock-devouring jaws. Here and there, along the bottoms of the rock slopes, are men, tiny objects at this distance, each man perched on top of a rock and pecking away at it with an air drill.

Jay Pearce, shipping clerk, at the Haverstraw quarry. Back of him is the stone-washing plant, with the conveyor housings running to and from it. In the background is the "movie-set" hill which hides the quarry.

Meet the Men Who Keep the Wheels Turning

Before we make a closer inspection, let's park the car beside the quarry office. Greer Tomlins, the Superintendent, comes out to greet us. With him comes L. F. Miller, Electrical Engineer of the New York Trap Rock Corporation. We are lucky, for Mr. Tomlins knows every rock in the quarry and every belt and bolt in the mill by its first name, while Mr. Miller, who designed and supervised all the electrical installation, makes the volts and amperes come up and eat out of his hand.

We start asking questions and learn that this Haverstraw plant was completed in 1926 by the Burrell Engineering and Construction Company of Chicago, for which outfit E. Lee Heidenreich, Jr., was Chief Engineer. We just finish noting this fact when along comes Mr. Heidenreich, himself, now Chief Engineer of the New York Trap Rock Corporation. More good luck for us!

After a cordial welcome, we are urged to prowl about to our heart's content, so, camera in hand, we walk across the smoothly graded, crushed rock paved, quarry floor toward the trail which leads to the top of the cliff.

Something New in Dragline Operation

A long, steep climb brings us to the top of the quarry face. Lots of trees up here, but none of them very large. It's almost a miracle how a tree can grow at all in soil so thin, for there is barely 1% overburden. Ordinarily there stripping is unnecessary, but occasionally pockets of a few hundred cubic yards are encountered.

A turnpike shovel, operated by a Fordson tractor, scrapes away this dirt and piles it in a heap, away from the quarry face. After the quarry face is blown away almost to the edge of the pile of earth, a single line cableway is rigged from one of the electric shovels way down on the quarry floor. At the top end of this 500-foot length of cable, up on top of the cliff, is attached a 1-yard Sauerman dragline bucket. A short length of cable fastens this to the Fordson for backhauling. Back and forth the bucket goes, dumping the pile of overburden over the edge of the quarry face and down to the quarry floor.

25 to 30 yards of overburden can be thus disposed of in an hour, but as we noted before, such pockets are few and far between. After the contents of a dirt pocket are dumped down on the quarry floor, one of the electric shovels comes along and loads the dirt into trucks which haul it away to a dump.

When the quarry was first opened up, and the quarry face was low, the quarrying method employed was to drill toe and vertical holes to a depth of about 20 feet, spring them several times and fire them with 60% dynamite. Now, with some of the quarry face 160 feet high, there are three methods in use, depending on the height of the face.

How They Drill the Blast Holes

For quarry face up to 40 feet high, three X-71 Ingersoll-Rand drifter drills on tripods are used to drill 24-foot toe holes. These toe holes start about 18 inches above the quarry floor and slant downward until they are about 18 inches below the quarry floor where they end. Five to eight holes are drilled, radiating from one set-up; drills are set up eight to ten feet apart; and from forty to fifty holes are drilled to each thirty to forty lineal feet of quarry face, depending on local conditions. The drill holes are started at 3¼ inches diameter and finish at 1¾ inches diameter.

For quarry face between forty and one hundred feet high, well drill blast holes are spaced 28 feet back from the face and 20 feet apart.

For quarry face over 100 feet high, well drill blast holes are spaced 30 feet back from the face and 22 feet apart.

All well-drill holes are located by company engineers for depth and spacing. No toe holes are drilled when well-drill holes are used. Electrically operated Sanderson Super-Cyclone well drills are used for all well-drill holes. Starting at 8¾ inches diameter, well-drill holes finish 5 feet below the quarry floor level with a diameter of about 8⅛ inches.

The trap rock at the Haverstraw quarry is extremely hard, but the drills make from 5 to 10 feet of hole before sharpening is necessary, and the average speed of drilling is about 1½ feet per hour. All well-drill sharpening is handled in a special shop on the hill above the quarry face, and on this hill, Abram Dykens, the well-drill foreman, reigns supreme.

Peering cautiously over the edge of the quarry

At New York Trap Rock Corporation's Verplanck's Point quarry car haul is used with the Woodford Electric Haulage System.

Yet at Haverstraw the same company uses truck haul. The difference in type of bank makes cars more efficient in one, trucks in the other.

The main storage silos. At the right is the conveyor-belt bridge over the West Shore railroad tracks. At the left is the loading wharf, and out on the river is a tug bringing in a couple of empty barges. Screens for commercial sizing are located on top of the large storage silos.

face, we note that there appears to be very little blocking to do, although we learn later that there are ten Ingersoll-Rand jackhamers on hand for emergencies. All jackhamer and drifter drills are sharpened in a shop at the quarry floor level, where a complete Ingersoll-Rand drill sharpening outfit is located, including an oil-fired heater, a No. 50 sharpener, and so forth.

The intermittent chug-chug-chug which we hear occasionally, when the crushers and rock drills permit, comes from a couple of electrically driven Pennsylvania air-compressors. Later on Operator Asa Call tells us that each of these water-cooled compressors has a capacity of 1,300 cubic feet per minute; that the storage tank is 48 inches by 120 inches, and that air is supplied at a pressure of 90 lbs. through a total of 5,000 feet of 3-inch pipe, with 2-inch branches.

How They Load 'em and Fire 'em

Charles McElroy, blasting foreman, tells us that drifter drill holes are loaded with 1½-inch cartridges of 60% gelatin. Tamping bags, filled with screenings, are then rammed in and the shooting is done with 110-volt current, which touches off one (and sometimes two) No. 6 wired exploders at the third cartridge from the bottom of each hole.

Well drill holes are loaded at the bottom with 75% gelatin, which constitutes 30% of the total volume of the charge. The cartridges are 7 by 24 inches, and into the third from the bottom is inserted a wired No. 6 exploder, with a couple of half hitches of the wires around the cartridge. Into the next higher cartridge—the fourth from the bottom—is inserted a Cordeau end, with a half hitch of the Cordeau around the cartridge.

This may seem like wearing both a belt and a pair of suspenders to hold up your pants, but the men at the quarry claim it's well worth while to have two primer cartridges in each hole; they've never had a hole fail to fire.

Above the 75% gelatin comes about 10 feet of stemming. For this they use screenings, which range from ¼-inch size down to dust. On top of the stemming comes 60% of the total volume of the charge. This is easy to remember because the 7 by 24 inch cartridges are 60% gelatin.

Then, with no stemming intervening, comes the remaining 10% of the total volume of the charge, consisting of 7 by 24 cartridges of 40% gelatin. From the top of the 40% gelatin to the surface of the ground the hole is stemmed with screenings.

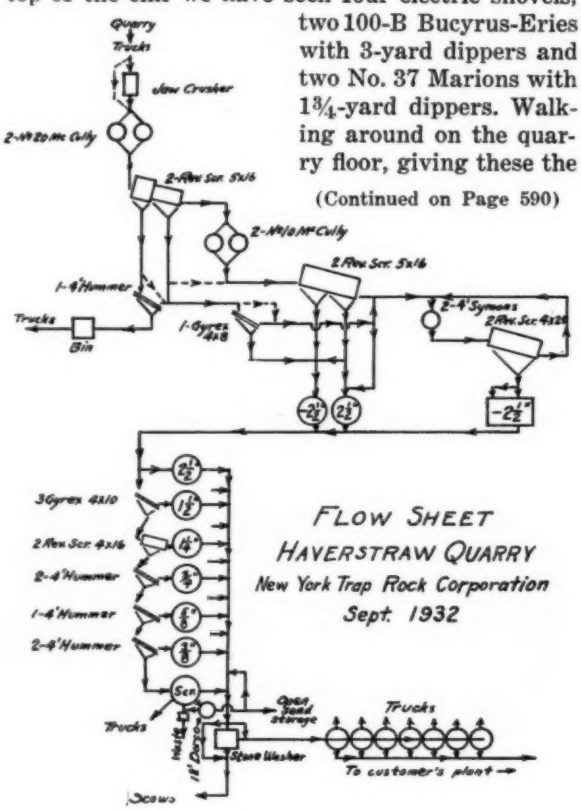
A 5-foot length of Cordeau projects from the top of each hole and is hooked up to a Cordeau header. At the battery end of the Cordeau header there is a No. 6 exploder which is wired in series with the exploder in each hole. When everything is hooked up, Charley McElroy bears down on a 50-hole battery and things begin to happen.

Ordinarily eight well drill holes are fired at a time in quarry face between 40 and 100 feet high, and five holes at a time where the quarry face is over 100 feet high. Counting end break, this brings down about 200 feet along the lower face and 125 feet along the higher face. 56 to 58 lbs. of gelatin are figured to blow down 100 cubic yards in the solid.

Considering the amount of rock brought down, there is comparatively little blocking to do, as the trap rock breaks well. Any stone that is not larger than 46x46x56 inches can be taken by the primary crusher.

It's a lot easier to walk down the hill to the quarry floor than it was to climb up. From the top of the cliff we have seen four electric shovels, two 100-B Bucyrus-Eries with 3-yard dippers and two No. 37 Marions with 1¾-yard dippers. Walking around on the quarry floor, giving these the

(Continued on Page 590)



Bridge Builder CUTS COST of falsework

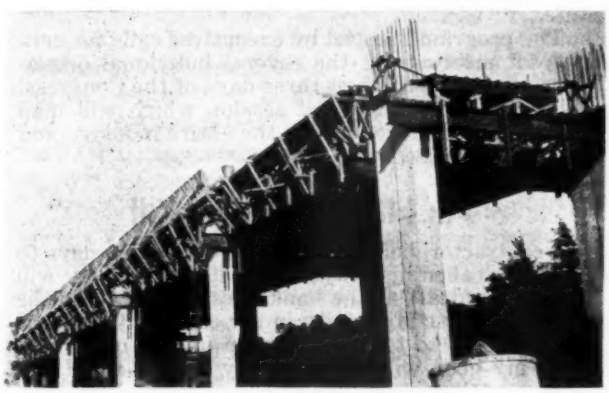
Interesting methods used in construction of overhead for D. L. & W. by N. D. Peters & Company, Inc.

N. D. PETERS & COMPANY, INCORPORATED, general contractors of Utica, New York, have lately completed their contract with the Delaware, Lackawanna & Western Railroad Company for an overhead bridge at Cassville, New York, eliminating the surface grade crossing at that point. The bridge, constructed of reinforced concrete, is over five hundred and eighty feet long, and provides a roadway for vehicular and pedestrian traffic twenty-four feet in width. The bridge floor at its highest elevation is more than fifty feet above ground level.

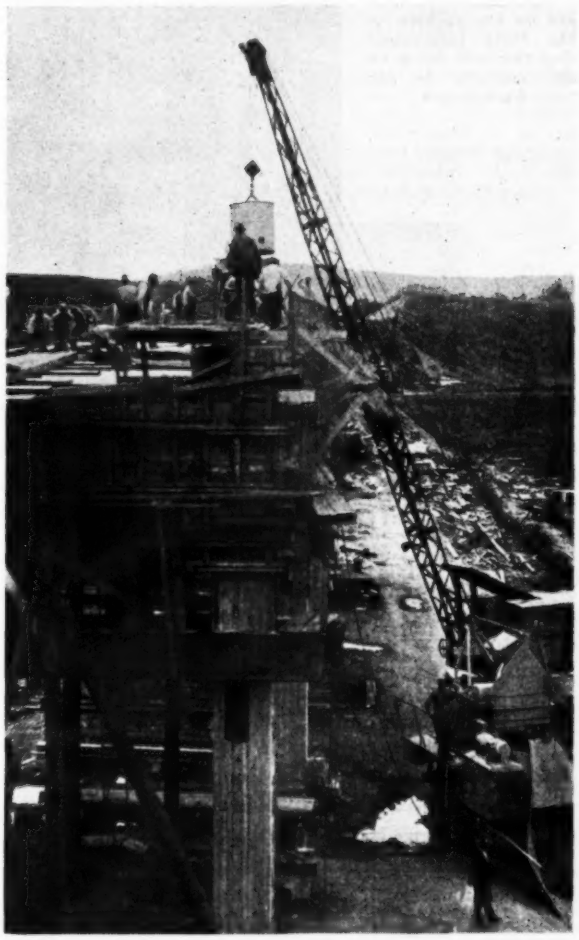
It is interesting to note the important roles played by the company's gas shovel equipment during this period of construction; a half-yard Speeder and a Type 1035 Bucyrus-Erie crane handling all operations. Another interesting feature of the building of the project was the method of falsework employed.

Swampy Formation Makes Work Difficult

The line of construction lay across a marshy section of land, dotted with live springs, interspersed with streams, and covered by attendant swamp areas. Before any actual work upon the contract could be started, the area had to be drained and a roadway built along the line of work. The Speeder shovel, after ditching and draining the site, made the excavation for the pier footings. The Bucyrus-Erie followed up with the pile driving.



This view shows how the falsework was built on the steel falsework beams which were placed and dismantled by the Bucyrus-Erie crane.



Using a 70-foot boom the Bucyrus-Erie handled the 1-yard Blaw-Knox concrete bucket on lifts as high as 60 feet. From 25 to 30 yards of concrete were poured per hour.

Ground Falsework Dispensed With

With this contract, if the ordinary and conventional rules for falsework were followed, the soft and swampy earth formation, in conjunction with the height of the intended structure, would demand and make necessary an excessive amount of additional pile driving in order to prevent deflection. The ground surface was so unstable that no uprights whatever could have been given a firm foundation with the aid of timber piling. To eliminate this pile driving, and to accelerate construction, the contractors made use of a falsework system designed and patented by M. Hirschthal, Bridge Engineer of Hoboken, New Jersey. The employment of this design of falsework was an innovation in bridge construction in this territory.

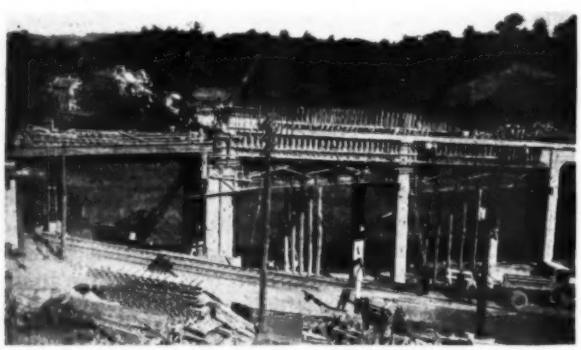
In this procedure, the permanent columns were poured in advance of the superstructure, and metal

Looking across the valley and over the tracks of the D. L. & W. between the columns of the new bridge. Note the brackets on the column in the right foreground and the bolt holes on the columns in the background.

tubes were inserted near the column tops to provide for bolts. To these bolts, or rods, brackets were attached to hold temporary structural steel beams. Using this framework of beams for a base, the forms and lagging for the bridge deck and superstructure were erected. Thus, the amount of falsework and lagging was brought down to a minimum and the permanent columns or piers were used to carry the load of the forms and concrete. Also, unobstructed space beneath provided needed working room, and an appreciable saving was made both in time and the cost of falsework.

Bucyrus-Erie Uses 70-foot Boom and 1-yard Blaw-Knox Bucket Lifting Concrete Over 60 Feet.

The Bucyrus-Erie crane was used in erecting and dismantling the steel falsework beams, and using a one-yard Blaw-Knox concrete bucket it deposited all of the concrete that entered into the make-up of the structure. In placing the concrete for the superstructure the Type 1035 carried a



The permanent columns were poured in advance of the superstructure, then beams were laid across from column to column and the falsework for the deck was erected on these temporary girders.

seventy-foot boom, marking the initial time that a Bucyrus-Erie of this type carried a boom of such length. In taking the concrete from mixer to form, the shovel averaged from twenty-five to thirty yards of concrete per hour, and its maximum lift with a cubic yard of concrete was over sixty feet.

This bridge is one of several structures built during the past few years by the bridge department of N. D. Peters & Company. This concern numbers among its completed contracts throughout New York State many important construction projects built for state, railroad and municipality. It was founded at Utica, New York, over a score and a half years ago, and maintains its general offices and shops in that city.

The Cassville Elimination Grade Crossing contract was supervised by Clarence H. Kassing, bridge engineer for the firm, under the direction of Nicholas D. Peters, the company's president and general manager. The Bucyrus-Erie employed on the project was handled and operated by William J. Hewitt.

HIGHWAY AND BUILDING CONGRESS
January 16th to 20th

DETROIT, during the week of January 16, 1933, will be the setting for the most interesting and informative series of meetings ever staged in the history of the construction industry—the Highway and Building Congress. The Congress is more than an assembly of thirty different organizations of the construction industry; it will be a mobilization of the second largest business in the United States. Its purpose is to concentrate the great strength of the construction industry in overcoming those problems which endanger their economic future. Organizations participating include: Construction League of the United States, American Road Builders' Assn., American Society of Municipal Engineers, Associated General Contractors of America, Truck Association Executives of America, American Motorists Association, Canadian Good Roads Association, National Highways Association, National County Roads Planning Com., National Rural Letter Carriers Association, American Institute of Steel Construction, Associated Equipment Distributors, National Crushed Stone Association, National Paving Brick Association, National Ready Mixed Concrete Assn., National Sand and Gravel Association, Portland Cement Association, Steel Founders Society of America, Inc., and The Asphalt Institute.

The program mapped by executives calls for concurrent meetings of the several individual organizations during the first three days of the Congress, to be followed by a joint session which will map a coordinated procedure for the entire industry and allied enterprises.

An Honest Man's Will

A contractor, being told he had only a few days to live, called his lawyer and said: "Make my will so my overdraft at the bank goes to my wife—she can explain it. My equity in my car to my son—he will have to go to work to keep up the payments. Give my good will to the supply house—they took some awful chances on me and are entitled to something. My equipment you can give to the junkman—he has had his eye on it for several years. I want six of my creditors for pallbearers—they have carried me so long they might as well finish the job."

Electricity in a MODERN

General view of camp showing men's sleeping quarters, left; dining halls and kitchen, long buildings in center; and officers' headquarters, machine shops and warehouses at right.

CONSTRUCTION CAMP

Modern Hotel Kitchen contributes to Crew Efficiency at Boquet Canyon Dam

By Willoughby Welsh

THE BOQUET CANYON DAM is located 50 miles north of Los Angeles. The dam, in a steep and narrow canyon, is to be of the rolled-earth type and requires 2,800,000 cubic yards of fill. 450,000 cubic yards had to be stripped from the stream bed and sides at the site. 300,000 cubic yards of highway excavation is also required due to relocation of a road which extended through the lower level of the damsite. The dam will be 215 feet high above stream bed and will be faced upstream with reinforced concrete slab. Both slopes will be 3:1. The earth is trucked in, 7½ yards to the load, spread by bulldozers, and rolled in layers 6 inches thick. The borrow pit is about a mile from the dam and provides an extensive deposit of well-disintegrated granite. The material is kept well sprinkled for several days before loading to provide easier handling, less dust, and a better moisture control at the dam. The dam will provide a 34,000 acre storage basin which will be filled through a 4-mile pipe line from the Los Angeles aqueduct.

—Editor.

AT THE EDGE of the desert sixty-five miles by road from Los Angeles, a camp for 400 men has been set up to house the workers on Boquet Canyon Dam, which is to provide additional water storage for the City of Los Angeles.

Electricity is playing an important role in the building of this dam, it being used to operate the two-yard Bucyrus-Erie shovels for excavating the dam foundation, to operate the Schramm air compressor to furnish power used in drilling the tunnel, and last but not least, to do all cooking and baking in a modern all-electric kitchen.

"The greatest source of trouble in building the Owens Valley Aqueduct, completed some years ago, was in feeding the large army of workmen during the construction of the aqueduct across the desert," said E. G. Alberts, Commercial Cooking Expert of the Department of Water & Power, City of Los Angeles.

"Profiting by past experience, the Department made careful preparations for feeding and housing the construction force on this project, and electric cooking was decided upon after careful consideration," continued Mr. Alberts.

"The result is that this kitchen compares favorably with any large modern hotel kitchen, both in efficiency of operation and quality of food served.

"The importance of good wholesome food, properly prepared and served, is of the utmost importance to an organization such as this, working many miles from the nearest source of supply or railroad.

"The modern servant 'electricity' now makes possible conditions that were unheard of only a few years ago, when coal and oil were used for cooking and heating, and refrigeration was something vague that a person dreamed about only,—for the transportation of ice was a real problem."

After seeing the Boquet Canyon workers partake of a meal in their camp, and viewing the smiles of satisfaction over good food prepared in the latest scientific manner, one has a greater respect for the uses of electricity in promoting health and happiness, which adds to the workers' efficiency.

(Continued on Page 573)

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The Business Situation

STATISTICAL forecasting of election results has once more been vindicated by the outcome of the national vote. The many straw votes conducted by newspapers, and the great postcard poll of the Literary Digest, furnished evidence which the statistician refers to as arrays of random samples. For many weeks these samples had been indicating that unusually large numbers of voters were planning to cast their ballots for the Democratic ticket, and the outcome showed that the samples had correctly foretold the result.

The conduct of the political campaign has rather definitely retarded the business improvement that gained vigorous momentum last summer. Part of the gains have been retained, but the rate of advance has slowed down. It is well that the political campaign is behind us, for the problems of business recovery will now receive closer attention.

The volume of industrial production increased sharply from August to September. In August it was 49.5 per cent below the computed normal level, and in September it was only 44.6 per cent below. This is an increase of nearly 10 per cent, which is greater than any previous increase in one month of which we have record. The September figures are preliminary, and are subject to revision, which is not likely to make them any less favorable.

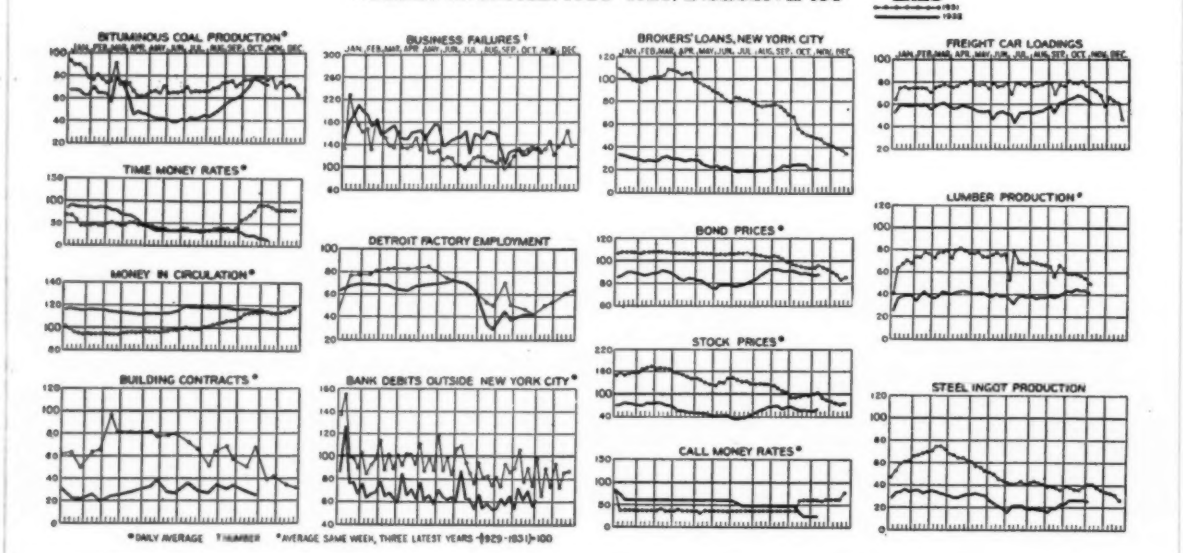
Almost every important element in the index showed advances from August to September. In manufacturing output there were especially noteworthy increases in iron and steel, textiles, food products, leather and shoes, cement and tobacco. In mining the largest advances were those in the output of coal, with the percentage increases in anthracite exceeding the important improvement in bituminous production. There were slight decreases in the output of lumber, and in the production of zinc and silver.

It now seems probable that the July record of 51.1 per cent below normal will prove to be the lowest record of this depression. Previous low records for earlier great depressions include those of 28.0 per cent below in 1921, a record of 18.1 below in 1908, one of 19.9 below in 1894, one of 19.1 below in 1843, and one of 22.0 per cent below in the Embargo depression of 1808. The severity of this depression as measured by curtailment of industrial production has been extreme.

At the beginning of September the number of blast furnaces actually producing pig iron was 41. By the first of October the number had increased to 46, and by the beginning of November it had mounted to 51. This is an increase of 22 per cent in two months, which is most unusual. In the past 50 years, there have been a number of increases in the blast furnace percentage as large as this one or larger, and almost or quite without exception they have marked the turning points of depressions from which sustained recoveries were initiated.

For the first time in this depression the member banks of the Federal Reserve System now have re-

WEEKLY BUSINESS INDICATORS



serves that are not only substantially in excess of those required by law, but which are rapidly increasing. This is one of the prerequisites of expanding bank credit, for it is only when banks have ample reserves that they can make new loans or purchase securities in large volume.

The goods produced each year in this country by agriculture, mining, forestry, and manufacturing may be classified in the main into two great groups. One group of products consists of consumption goods. These are materials that are promptly put into use by individual members of our population, and usually consumed or worn out in relatively short time. Most agricultural products, textiles, and articles made of paper, rubber and leather fall within this grouping. The other great group consists of durable goods. It includes such products as the metals, lumber, cement, ships, freight cars, locomotives, and motor vehicles.

In times of depression the output of consumption goods does not decrease very sharply, for the people continue to wear out clothes, and both they and their domestic animals keep on consuming farm products. It is the production of durable goods that is greatly curtailed during depressions, for in such times new construction, and the installation of industrial equipment, and the manufacture of railroad rolling stock and of motor vehicles can be postponed.

The per capita production of durable goods will be much smaller in 1932 than in any previous years since 1899, and probably we should have to go back a good deal further to find smaller output figures. The restoration of normal business activity involves a large increase in the production of durable goods. New construction, increased buying by railroads, new industrial equipment, and much larger sales of motor vehicles are the most important elements.

WE WANT MORE !!!

Old Timer, Can You Answer These Questions?

Every now and then, Excavating Engineer is asked concerning some old timer, some old machine, or some old practice.

Here are some recent requests. Can you answer them? Can you supply the information asked?

Both the Questioners and Excavating Engineer will appreciate hearing from you. Published replies will be paid for.

Have you a picture of the old Cross Excavator — particularly the second machine that was built for Mathews as a back digger? Did you ever see it? Can you describe it? Where was it used?

Does anyone know where "Whiskey Bill" is? Many old timers will recall that crack operator of the old days in Illinois, who was known far and wide as "Whiskey Bill". It is rumored that he is dead. Do you know? What was his last address?

Have you a snap shot or photograph of other of the Old Rood machines? Do you remember the old double boom machines that worked in Illinois, Minnesota and Iowa in the 90's? Do you know of anyone now living who operated them?

From Old Timer John S. Kochtitzky, Jr.

IN response to the request which appears again on this page Old Timers have supplied us with many interesting pictures and anecdotes. This month we present pictures and a letter from John S. Kochtitzky, Jr. of The Kochtitzky Insurance Agency, England, Arkansas.

"In your October issue you requested pictures and information about two machines of which I know something. First a Cross Walker—inclosed you will find a picture of a Cross Walker which was owned by the Arpin family who brought the machine from Minnesota to Arkansas in 1920 to do some work for my father, J. S. Kochtitzky, Sr. of Cape Girardeau. This machine was later shipped to Grady, Arkansas, subbing from my brother, Oscar Kochtitzky of Little Rock and has since been abandoned and burned. The junk man got 10 train loads (more or less) of chain from this outfit.

"In 1919 my brother and I purchased two Rood machines from some firm in the north, I believe in Minnesota. One was a Walker machine No. 3. The other a cater-

(Continued on Page 591)

A "Rood" machine mounted on crawlers —front view.

Cross Walker in the Arkansas Rice Fields.

Another view of the "Rood" crawler—mounted machine.

FIELD NOTES

Turnpike Sections

WALTER OSTERLOH of the *Hoops Construction Company, Twin Falls, Idaho,* wrote to ask us what "turnpike section" means. That had us down for the "count" so we passed the inquiry on to H. S. Fairbank, Chief, Division of Information, Bureau of Public Roads, Washington, D. C. Mr. Fairbank kindly furnished an explanation which is quoted here as of probable interest to any of our readers who are unfamiliar with "turnpike roads."

> Webster's dictionary defines "turnpike" as: "To form, as a road, in the manner of a turnpike road; to throw into rounded form as the path of a road." A "turnpike section" is, therefore, one having the above characteristics.
>
> In some sections of the country it has been the practice of engineers to use the term "turnpike section" to describe a road thrown up with a blade grader generally through level or rolling country. For example, a road project might be described as having one mile of side-hill work, one mile of through cut, and one mile of turnpike work. We believe that this use of the term is colloquial and that it is not established as a correct technical term in general use.

Out in Idaho, however, they have a more specific definition of the term and here is the way J. H. Stemmer, Director of Highways, Department of Public Works, Boise, kindly explains for us the "Turnpike Road Section" as used in Idaho:

> The turnpike section type of highway as used by the Idaho Bureau of Highways applies only to a special section used in passing through small towns and villages on streets having no paving. This section is used to increase the width of the traveled way to the full distance between curb lines instead of confining it to the width used outside of the towns.
>
> On a turnpike section the regular out-of-town width from shoulder to shoulder is used and is crowned ¼ inch per foot. The slopes, however, from the shoulder to the curb line are made 10 to 1 instead of the usual 4:1 slopes of ditched sections.
>
> The width of surfacing is usually extended to the curb line and tapers in thickness from the shoulder out.
>
> There are usually no ditches and when unavoidable they are made as shallow as possible, being flatter than on standard sections to permit driving through them. When there are no curbs a 4:1 or 6:1 slope is carried out the balance of the distance.
>
> The turnpike section as used is merely a compromise between a standard highway and a surfaced village street.

Our thanks go to Mr. Fairbank and Mr. Stemmer for their answers and to Mr. Osterloh for his interesting question.

Dredging Contractor Held Liable for Damage by Seepage

THE RIGHT of a property owner to recover damages against a dredging contractor on account of water that seeped into a basement while a hydraulic fill was being made on a margin of tidewater was upheld by the Washington Supreme Court in the case of Wolten Grocery Co. v. Puget Sound Bridge & Dredging Co., 4 Pac. 2d, 863.

Attorneys for the contractor unsuccessfully sought to invoke a rule that a contractor is not liable for damage done to private property in the execution of a contract with a municipality or other public body. But the court said that that rule applies where the damage is not the result of negligence, adding:

"A contractor is liable for damages in cases where damage does not necessarily result from the carrying out of the contract, but accrued because of the negligent manner in which the contractor performed the work."

The court also decided that the right of the property owner in this case to recover damages was not defeated through having joined in a petition for the improvement nor through having filed claim against the city.

—A. L. H. Street, Attorney-at-Law.

Two Handy Substitutes for Calipers

QUITE OFTEN one unexpectedly needs something in the nature of rough calipers to compare small bars, rods, and other round or irregular objects. If without such a tool, the common curved handle bright pliers can be used with a fair degree of accuracy as shown here. Take a small slow tapered stick or splinter and place it between the jaws, moving it in or out as the handle ends are brought to lightly touch the object. Held just snugly enough to keep the stick in place, the pliers in this manner are a mighty handy and ready substitute in a pinch. Not as accurate as high priced micrometers of course, but for the many little emergency jobs of rough yet fairly close measuring we run across when without calipers, they are as good as any makeshift tool available.

Ascertaining the diameter of a small round object by placing something square against or along the rule is of course commonly and easily done when things to do it with are handy. Getting such a measurement without much to work with is often a bit of a puzzle. Remove the tray from a common penny wooden match box. Use the outside of the box with the rule as shown. It goes over a section of the rule nicely, is easily held or moved with the finger or thumb, and is square enough to secure a diameter closely enough.

—Frank W. Bentley, Jr.

EQUIPMENT YOU OUGHT TO KNOW ABOUT

Western Shouldering Attachment

WESTERN WHEELED *Scraper Company*, Aurora, Illinois, has made another notable contribution to the road building industry. Heretofore, the shaping of shoulders along paved highways has been an expensive operation owing to the cost of removing the excess dirt. A Shouldering Attachment has just been developed for use with the Western No. 6 Elevating Grader, in place of the plow. It will build a shoulder true to line and grade, and at the same time will load the excess material for use in bank widening and other disposal.

This combination of machine and attachment gives the contractor an exceptionally fine elevating grader for use in grading work and also an inexpensive attachment that will shape and finish a shoulder with an exactness that no blade grader possibly can equal and that will be acceptable to any engineer.

The shouldering attachment consists of a strong blade fastened to a frame that is rigidly attached to the elevating grader in place of a plow; an outer auxiliary blade for cutting the slope to the ditch, and a screw conveyor to carry excess dirt to the elevator belt for loading into trucks or wagons. This Shouldering Attachment can be fitted to machines already in the field.

The outer end of the main blade can be raised or lowered to form the required slope of the shoulder in the same way that the plow is raised or lowered. The inner end also can be raised or lowered when the contour of the pavement or some obstacle makes it necessary. As the top of the blade is 21 inches above the cutting depth and the screws of the conveyor are 5 inches above the cutting edge, a large amount of loose material is carried in front of the blade before the loading begins. This feature provides enough loose dirt to fill the smaller depressions.

The outer auxiliary blade can be adjusted to a variety of angles for cutting the required slope to the ditch. It also is adjustable horizontally, making it possible to cut and shape shoulders of varying widths up to a maximum of 11 feet.

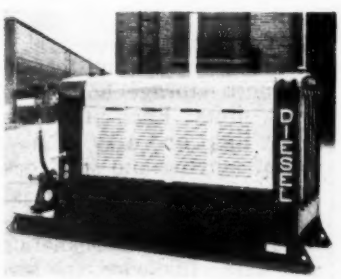
The screw conveyor is operated from the same motor on the machine that serves to elevate the load. This permits the operator to stop the machine and continue loading, should the dirt pile up. Should a low place need filling, it permits him to stop the screw conveyor while the machine continues to move forward, spreading evenly the material carried in front of the blade.

As the wheels of the machine run on finished pavement, an absolutely smooth cut results, at the depth to which the blade has been set. A spirit level on the blade and in constant view enables the operator to regulate the cut with exactness. It can be adjusted for any slope desired.

When writing the manufacturing company for information, ask for Bulletin W-32-D, and please mention Excavating Engineer.

Caterpillar Stationary Diesel Ready

THE DIESEL engine that has been developed by the *Caterpillar Tractor Co., Peoria, Illinois*, is now available to the stationary engine trade. This engine has a 6⅛-inch bore, 9¼-inch stroke, and is governed at 700 R.P.M., developing better than 85 H.P. It has four cylinders, is four-cycle, and uses the solid injection fuel system, and a pre-combustion chamber.



The fuel system of any Diesel is generally the determining factor in its successful and economical operation. This factor has received the most serious consideration of the designing engineers and the outstanding performance of the "Caterpillar" Diesel is due to its simplicity and effectiveness. The method of handling fuel is by means of individual pumps mounted on each cylinder. These are accurately calibrated and sealed at the factory, thereby preserving the intended settings under operating conditions. The injectors have a single orifice of .086 dia. (2.3 mm). A self cleaning pintle keeps this orifice from clogging and maintains its prescribed dimension. Complete details on this unit will be sent to any interested reader. Please mention *Excavating Engineer* when writing.

Gasket Compound Resists Hot Oil and Gasoline

NOT EVEN oil at a high temperature will affect gaskets of a new substance, designated No. 1281 Gasket Compound, that has been developed by *General Electric Company, Schenectady, N. Y.* Glyptal is the G. E. trade name. The compound may be used in contact with cemented joints; neither dilute acids nor dilute alkaline solutions effect the compound. It is flexible and practically incompressible, and there is no noticeably hardening or stiffening in outdoor exposure tests. Low

temperature does not affect its efficiency when assembled in a joint.

Among applications recommended are those where resistance to hot oil is of primary importance, where exposure to naphtha, gasoline, kerosene, benzine and similar solvents may occur, where moisture is to be excluded and oil resisted, where there may be prolonged exposure to ozone, and where electric corona may occur.

Where conditions to which the gasket is exposed require a sticker a pigmented varnish (No. 1201) may be used as a cement and as a protective film. At present the material can be obtained in sheets up to 13 by 36 inches, in thicknesses from one mil to one-eighth inch. Round gaskets available at present have a maximum diameter of 12½ inches and a maximum thickness of ⅛ inch, but larger sizes will be made available at a later date. For further information write General Electric Company, mentioning this magazine.

Portable Plant Built in Units

CONVINCED of the need for a Portable Crushing and Screening Plant, which would enable producers to work good local deposits in competition with small short-haul pits, *Stephens-Adamson Mfg. Co. of Aurora, Illinois,* has developed a Unit Type Plant of unique design.

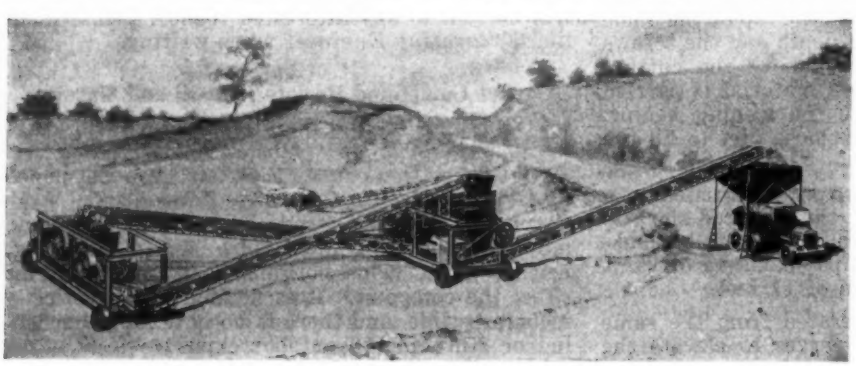
The plant consists of a number of standard units designed for quick assembly in different combinations to suit the particular job or deposit in which the operator is interested. These units consist of receiving hopper and feeder, crushing unit, screening unit, storage hoppers and complete belt conveyor units. Each unit is self-contained, comparatively light and easy to move, thus simplifying the job of moving and setting up in new locations.

Apparently, the plant is designed to handle a wide variety of deposits. The crushing unit is built to take one or two crushers of various makes, types and sizes. Likewise, the screening unit will mount a single, double or triple deck vibrator screen. Where washed material is required, water sprays are added above the vibrator screen and a classifier or dewatering unit is quickly inserted.

Gas or Diesel engines or electric motor drives can be furnished and where electric power is not available for motors, portable generator sets are furnished.

Several advantages are claimed for this type of plant. The various units, while quite compact, permit greater headroom and clearance for inspection, lubrication and adjustment than is practicable in single assembly plants. The operator has a wide variety of combinations to choose from and does not have to haul any unnecessary equipment to new locations. Another economy claimed by S-A engineers is that the operator can buy only the units *actually required* for the job on hand. For later jobs, additional units can easily be bought as *needed.*

For further information please write Stephens-Adamson Mfg. Co. of Aurora, Ill. We will appreciate your mentioning Excavating Engineer.



Hydraulic Door Control Device

A HYDRAULICALLY-CONTROLLED door-opening and closing mechanism has recently been announced for their complete line of bottom-dump crawler wagons by Trackson Company. This mechanism, according to the manufacturer, supplements the standard hand winding mechanism which remains intact at the rear of the wagon for emergency use and performs certain functions which could not be accomplished as readily if it were omitted.

The mechanism is installed on the front end of the body and is completely housed within a removable steel cover. Accessibility for renewal of door cables and adjustments is one of the features claimed. Another feature is the automatic equalization of the door cable, thereby eliminating sagging doors. Any stretch in the cable which would allow both doors to sag below their closed position can be removed by winding the surplus cable on the standard hand winding drum at the rear of the body. This takes only a moment's time and eliminates cutting off cable.

The hydraulic cylinder installed on the front of the wagon is actuated by a hydraulic pump connected to the tractor at the power take-off. Flexible hose connects the pump with the cylinder. The entire system operates at low pressure. The greatest amount of work performed by the pump is to close the doors weighing about 500 lbs. which requires relatively little pressure to the built-up within the hydraulic system.

All operations pertaining to the opening and closing of the doors are controlled by the tractor operator, making it unnecessary to employ wagon winders. This system may be applied to wagons working singly or in tandem and pumps may be applied to all makes of tractors. When operating in trains of two, each wagon can be dumped independently of the other. Further particulars can be had by addressing the *Trackson Company, 1320 So. First St., Milwaukee, Wis.*

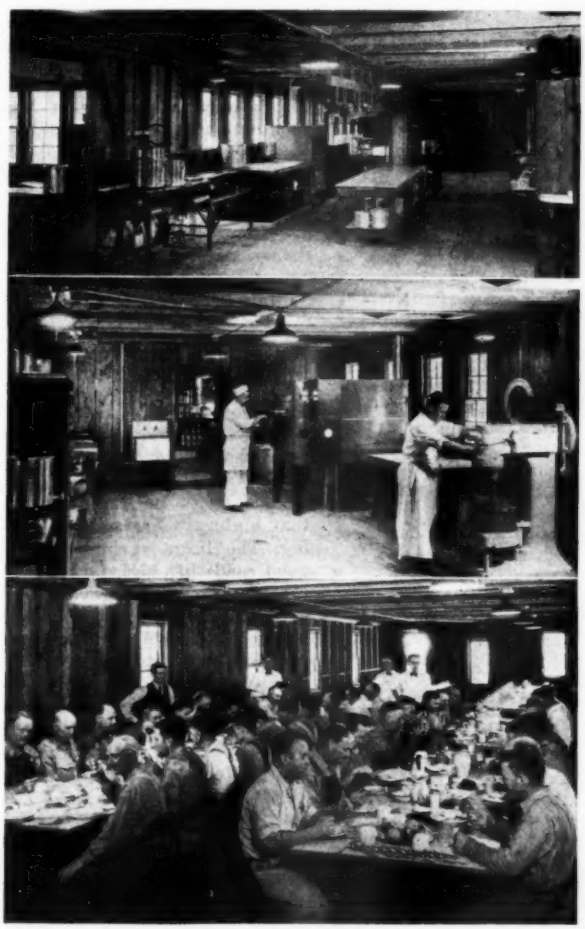
Electricity in a Modern Construction Camp

(Continued From Page 567)

Plans for the kitchen were worked out by George M. Beck, in charge of commissary, assisted by E. G. Alberts, mentioned above, E. F. Leahy and J. T. Whitestone, Electrical Engineering details, Hugh Mulholland Resident Engineer, supervised building construction, and E. W. Clinton, Electrical Foreman, in charge of installation.

In addition to lighting, some of the important uses of electricity in this camp are:

Cooking and baking, connected load	91.8 Kw.
Dough Mixer	2 H. P.
Refrigerator	2 H. P.
Electric Heat for Dining Halls and Construction Headquarters	85.5 Kw.
2 Electric Shovels (2 yd. capacity)	200 H. P.
100 H. P. Motor generator set each	
Air Compressor	
Miscellaneous Motors	
Machine Shop	
Carpenter Shop, etc.	



Top: All-electric kitchen. Here are shown coffee urns, griddle, ranges, roast ovens, fry and stock kettles.

Center: Modern Bake Shop where electric oven and mixer are used in baking all bread and pastries consumed in camp.

Bottom: Workers on Boquet Canyon Dam enjoying electrically cooked meal. Dining room is heated electrically.

Electric shovel, 2-yard capacity, loading to Linn tractor in excavating for foundation of Dam.

E. L. Bartlett, Steward, and George Wilson, Chef, are enthusiastic about electric cooking. Of course, they have had experience with it before, having been with Anderson Bros. Catering Company for ten years on movie location work, and in San Gabriel Dam and Boulder Dam construction camps, which also are using electric cooking equipment. Pointing with pride to the immaculate cleanliness of the kitchen, Chef Wilson said, "Electric heat makes possible perfection in cooking, without constant watching. Meats roasted in electric ovens have a finer flavor, because the valuable juices are retained and considerable savings are made as there are less shrinkage and trimming of meats.

"Greater variety of menus is possible, as I have more time for preparation of foods instead of being constantly over the range.

"As for speed—I can now sleep an hour later in the morning than when using oil fuel, as the electric range will come up to full heat in about 35 minutes, one-third the time required by former fuel fired ranges."

"I'd like some old fashioned loving."
"I'll introduce you to grandma."

SHOTS FROM THE FIRING LINE

How the States Can Use the $120,000,000 Loan Fund Included in the Federal Relief Act for Federal-Aid Roads

STATES may **borrow** money from this fund to match unused balances of regular Federal-Aid Road Funds for road construction to be performed by July 1, 1933.

The purpose of the new $120,000,000 fund (column 3) is to provide a **loan** fund to enable states to **borrow** money from the federal government to match unused balances, if any, of regular federal aid (column 1) and thus help relieve unemployment by providing money for **immediate** construction.

State	(1) Unused Balance of Regular Federal Aid Funds (Gifts) as of 6-30-32	(2) Amount Available for Matching with Loan Allotment (Drawn from Col. 1 to Match Col. 3)	(3) Allotment of New $120,000,000 Emergency Fund (Loans)	(4) Approx. Total Available If Used By 7-1-33 (Col. 2 plus Col. 3)	(5) Remaining Balance in Regular Federal Aid Fund (Col.1 Minus Col. 2)
Ala.	$5,469,694	$2,550,053	$2,550,053	$5,100,106	$2,919,641
Ariz.	742,533	742,533	1,762,636	2,505,169	0
Ark.	2,162,507	2,091,431	2,091,431	4,182,862	71,076
Calif.	32,946	32,946	4,669,711	4,702,657	0
Colo.	2,057,603	2,057,603	2,255,281	4,312,884	0
Conn.	390,452	390,452	779,324	1,169,776	0
Del.	167,140	167,140	600,000	767,140	0
Fla.	2,541,174	1,629,204	1,629,204	3,258,408	911,970
Ga.	1,345,949	1,345,949	3,120,191	4,466,140	0
Idaho	345,018	345,018	1,508,485	1,853,503	0
Ill.	1,310,641	1,310,641	5,077,245	6,387,886	0
Ind.	381,104	381,104	3,060,266	3,441,370	0
Iowa	87,585	87,585	3,173,493	3,261,078	0
Kan.	567,001	567,001	3,276,334	3,843,335	0
Ky.	1,182,786	1,182,786	2,259,648	3,442,434	0
La.	321,408	321,408	1,740,196	2,061,604	0
Me.	137,272	137,272	1,070,600	1,207,872	0
Md.	8,964	8,964	1,015,296	1,024,260	0
Mass.	602,611	602,611	1,712,774	2,315,385	0
Mich.	2,452,326	2,452,326	3,783,179	6,235,505	0
Minn.	0	0	3,373,560	3,373,560	0
Miss.	5,152,976	2,160,628	2,160,628	4,321,256	2,992,348
Mo.	567,602	567,602	3,761,014	4,328,616	0
Mont.	3,465,267	2,525,108	2,525,108	5,050,216	940,159
Neb.	1,849,946	1,849,946	2,557,683	4,407,629	0
Nev.	86,974	86,974	1,578,025	1,664,999	0
N. H.	533,268	533,268	600,000	1,133,268	0
N. J.	698,945	698,945	1,659,121	2,358,066	0
N. M.	897,851	897,851	1,962,340	2,860,191	0
N. Y.	2,250,042	2,250,042	6,057,965	8,308,007	0
N. C.	3,728,867	2,890,203	2,890,203	5,780,406	838,664
N. D.	821,723	821,723	1,940,325	2,762,048	0
Ohio	1,682,314	1,682,314	4,501,069	6,183,383	0
Okla.	1,276,063	1,276,063	2,893,101	4,169,164	0
Ore.	875,392	875,392	1,996,128	2,871,520	0
Pa.	775,956	775,956	5,261,052	6,037,008	0
R. I.	325,565	325,565	600,000	925,565	0
S. C.	744,636	744,636	1,666,492	2,411,128	0
S. D.	1,085,351	1,085,351	2,002,076	3,087,427	0
Tenn.	3,157,110	2,609,757	2,609,757	5,219,514	547,353
Tex.	3,333,824	3,333,824	7,668,024	11,001,848	0
Utah	520,628	520,628	1,387,190	1,907,818	0
Vt.	0	0	600,000	600,000	0
Va.	1,817,277	1,817,277	2,258,196	4,075,473	0
Wash.	1,007,069	1,007,069	1,905,627	2,912,696	0
W. Va.	998,160	998,160	1,316,720	2,314,880	0
Wis.	283,938	283,938	2,992,438	3,276,376	0
Wyo.	120,711	120,711	1,540,811	1,661,522	0
Hawaii	1,335,908	600,000	600,000	1,200,000	735,908
TOTAL	$61,700,077	$51,742,958	$120,000,000	$171,742,958	$9,957,119

Note re Column 1: Figures as of June 30, 1932 from U. S. Bureau of Public Roads. Any or all of this unused regular federal aid (gift by federal government) is available to the state when matched by an equal amount supplied by the state. (Further withdrawals made from the regular federal aid fund since June 30, 1932 would change figures not only in column 1 but also in columns 2, 4 and 5.)

Note re Column 2: Where the amount of the unused balance of regular federal aid (column 1) is as great or greater than the loan allotment (column 3), an amount equal to the loan allotment (column 2) is available, as in the case of Alabama. But where a state already has used so much of its regular federal aid that the unused balance (column 1) is less than the loan allotment (column 3), as in the case of Indiana, then the state must, draw upon its unused balance (column 1) in the same proportion as it borrows from the loan fund (column 3); that is, 100%, 50% or 10% of the loan fund is available if 100% 50% or 10% of the unused regular federal aid is used.

Note re Column 4: This equals column 2 plus column 3. However, to speed up construction in order to relieve unemployment, this money (column 4) is available only for federal-aid projects "performed before July 1, 1933."

Note re Column 5: Column 5 equals column 1 minus column 2. These balances (column 5) being regular federal aid, are usable only if matched by equal funds provided by the state. In the event these balances are used, there would be available for road work the amount here shown ($9,957,-119) plus an equal amount supplied by the states ($9,957,-119) or a **total** of more than $19,000,000 in **addition** to the total amount shown for emergency purposes (column 4).

Motorist Gets Back More Than He Pays

THE State Highway Commission of Missouri fathers the statement that the average motorist in that state is saved $30 a year over and above his license fee and gas-tax payments by improved roads. On that basis the roads on the Missouri state system, which includes 3,100 miles of concrete, are returning $22,500,000 a year to the state's road users.

Although California is humorously thought of as a state of somewhat extravagant claims, there is no exaggeration in the state's announcement that her good highways, up to the middle of 1930, saved $54,000,000 to motorists. California's Highway Department calculates per mile savings in car operating costs over improved roads on a very conservative basis, and then cuts the whole total in two.

Frank T. Sheets, chief engineer of the Illinois State Highway Department, relates that Illinois' state highway system, nearly all concrete paved, reduces car operating costs $73,000,-000 a year. This is $25,000,000 more than motor car users pay out in taxes.

Such facts as these testify that highways are self-supporting. The large savings due to good roads lift highways out of the class of most government activities in that the individual is directly benefited. There is a growing recognition that the license fee as well as the gasoline tax when put back into roadbuilding is not a tax in the ordinary sense, but rather a charge for service.

New York State Highway Contractors Meet December 13th

THE New York State Highway Chapter of the Associated General Contractors of America will hold its annual convention in Binghamton on December 13, 14, and 15. The headquarters will be at the Arlington hotel.

More than 400 members from all parts of the state, including prominent state officials and the state legislature, are expected to attend, according to Harry R. Hayes of Albany, Managing Director of the Association. The chairman of the convention will be Fred B. Davis of the Bing-

hamton Construction Company and Vice-President of the Association.

Highway construction problems and unemployment will be the subjects under discussion. Among the speakers will be Frederick Stuart Green, State Superintendent of Public Works; Arthur W. Brandt, State Highway Commissioner; Eleanor F. Anderson, Deputy State Industrial Commissioner; Charles A. Harnett, Motor Vehicle Commissioner; City Manager C. A. Harrell, and J. W. Holler, Division Engineer, State Department of Highways.

Portland Cement Association Elects

CEMENT MEN gathered at the Thirtieth Anniversary meeting of the Portland Cement Association at Chicago elected Charles F. Conn chairman of the board of directors. Mr. Conn, president of the Giant Portland Cement Company of Philadelphia, has been a leader in the cement industry for many years.

H. L. Block, president of the Missouri Portland Cement Company of St. Louis, was elected treasurer of the Association and is also a director.

Other new directors are: Charles Boettcher, president, Oklahoma Portland Cement Co., Denver; G. S. Brown, president, Alpha Portland Cement Co., Easton, Pa.; C. B. Condon, secretary and general manager, Hawkeye Portland Cement Co., Des Moines; Charles Horner, president, Kosmos Portland Cement Co., Louisville; J. B. John, president, Medusa Portland Cement Co., Cleveland; M. C. Monday, president, Hermitage Portland Cement Co., Knoxville; J. J. Porter, president, North American Cement Corporation, New York; and J. S. Young, president, Lehigh Portland Cement Co., Allentown, Pa.

Hold-over directors are: B. F. Affleck, president, Universal Atlas Cement Co., Chicago; George F. Coffin, secretary and treasurer, Nazareth Cement Co., Easton, Pa.; Charles L. Hogan, vice-president, International Cement Corporation, New York; J. D. Johnson, president, Canada Cement Co., Ltd., Montreal; Morris Kind, president, Hercules Cement Corporation, Philadelphia; E. P. Lucas, president, Superior Portland Cement, Inc., Seattle; Blaine S. Smith, president, Pennsylvania-Dixie Cement Corporation, New York; L. T. Sunderland, president, Ash Grove Lime and Portland Cement Co., Kansas City; John Treanor, president, Riverside Cement Co., Los Angeles; C. E. Ulrickson, vice-president, Trinity Portland Cement Co., Dallas; E. J. Mehren, president, Portland Cement Association, and Wm. M. Kinney, vice-president and secretary of the Association.

The Thirtieth Anniversary of the Association was commemorated at a special dinner at which Robert L. Lesley, a founder of the Association and its first president, was a guest of honor.

Because of its organization in 1902, the Portland Cement Association ranks as one of the oldest trade associations in the country.

The Association was formed to consider what is now a minor incident in the manufacture of cement, the sacking problem. At the time of the Association's birth, the use of cement was largely confined to rough structures, such as dams and foundations. But through cooperation the cement manufacturers standardized principles of use so now cement is utilized in nearly all structures, either as structural or decorative and oftentimes both.

Foreign

Hawaiian Notes

Operator C. R. Brown sends this snap of himself and Mrs. Brown and the Bucyrus-Erie Gas+Air which he operates for **Thos. Haverty Company** of Honolulu. The picture was taken during a rest on the way up the Cola Cola Mountains. Mr. Brown tells us the Gas+Air has won the name of "Old Faithful" for the way she stands up to the hard coral rock digging and steep hill climbing of the islands.

By PERRY H. KRAFT

Construction of Uncle Sam's newest and largest flying field is practically completed. **Wheeler Field,** located about twenty miles from Honolulu, on the island of Oahu, has been an army base since the early days of flying. Recent construction there places it in the front rank of U. S. airports.

The Hawaiian Contracting Company handled the construction of paved areas, roads, walks, electrical distribution and road lighting systems, water supply, branch sewer, drains and grading. President H. P. Benson of the contracting company, commented that it was a distinct surprise to find the dirt to be of such a light texture. It was easily handled, their Bucyrus-Erie shovel not being called on to exert itself in making an average hourly output of about 85 cubic yards. Hauls were short and light trucks were utilized.

Panama Canal Zone

The interesting picture above shows work of the **W. E. Callahan Construction Company** and **Peterson, Shirley and Gunther** on their Madden Dam Project in the Panama Canal Zone. The recent letter from A. J. Ackerman, Chief Engineer for the contractors comments on the excellent work done by the 14 Caterpillar Sixtys used for hauling. Says Mr. Ackerman:

"During the dry season extending from December to April the Sixtys worked on Saddle Dams which serve to fill up low arroyos and form walls in the reservoir area. Pulling tumble bugs, they first stripped the various dam site areas, sometimes working on slopes as steep as 45 degrees. Then the embankments were commenced and the Sixtys went about their business in earnest, pulling one and frequently two, six-yard or eight-yard wagons. The material was deposited in two-foot layers and was thoroughly compacted both by the action of the Sixtys themselves and the use of a sheep's foot roller.

"With the onset of the rainy season the 'Caterpillars' and wagons were moved to the main dam site where there were some 260,000 yards of common excavation and 175,000 yards of rock excavation. And here the Sixtys met their first real test for they were fighting rain and mud—and in a country where 90 inches of rain may be expected to fall in eight months, the fight was by no means an easy one.

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REGARDLESS of the type of bucket you prefer—Multiple-Rope, Power-Arm, or Dragline—you can procure the biggest daily output by choosing from the Williams line of fast digging buckets.

For instance, the Williams Type "MF" is the outstanding Multiple-Rope bucket. It opens its mouth wider, bites deeper, and operates faster. Six-Part Reeving gives straightest possible lead for closing cable—and unusually long roller guards in the head reduce cable wear.

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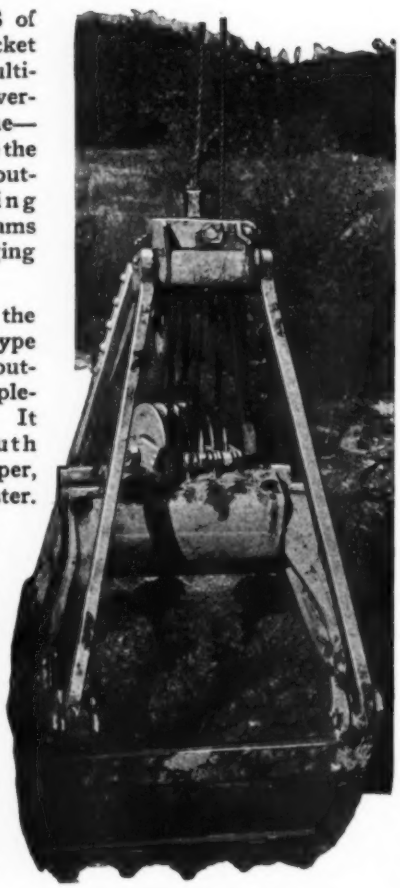

Type "MF" Multiple-Rope

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THE WELLMAN ENGINEERING CO.

7002 Central Ave., Cleveland, Ohio

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Shots From the Firing Line — Continued

"Gravel roads were first built to help the Sixtys pull their heavy loads over the rain soaked ground. For sixteen hours each day the Sixtys battled the mud and rain, crawling over huge rocks, slushing through knee-deep water, squirming and wriggling through sticky mud. But always fighting on and on. Load, haul, dump and return. Load, haul, dump and return. Hour after hour, day after day!

"But soon even the gravel roads could not withstand the heavy loads and the incessant rains. So the contractor built a timber road extending from the pit to the waste pile and now the Sixtys crawl over 12x12's with their pay loads and use gravel roads for returning to the pit.

"It's a long tough job, this battle against rain,—and it rains almost every day,—averaging about 10 inches each month of the rainy season. Yet the Sixtys have shown that they can fight for 16 hours each day against the worst the tropics have to offer and it looks like they'd continue to fight and crawl until the remainder of that 1,000,000 yards has been moved."

Belgium

The above illustration shows work on a section of the Albert Canal in Belgium by the firm of **Dumon Vandervin** who are excavating some 1,750,000 cubic meters of earth. In the cut shown, Mr. Godart, superintendent for this well-known firm of contractors, is working ten Caterpillar Diesel tractors, two Caterpillar Thirtys with La Plant-Choate bull-dozers, two Caterpillar elevating graders and 16 La Plant-Choate bottom-dump wagons. The canal, which will be about 150 kilometers in length, is 260 meters wide at the top, 33 meters deep and 24 meters at the bottom. In all its course the canal will have a width of 40 meters at water level and will carry water at 5 meters deep. It will permit navigation of boats from 1200 to 1500 tons and will have but five locks between Liege and Antwerp. A total of some 60,000,000 cubic yards of earth is involved in the excavation of the entire canal.

New York Notes

By M. E. FRANKLIN

Capt. Arthur W. Brandt, Highway Commissioner, announced that up to November 1st, state highway building totaled 480 miles. This is the smallest mileage since 1926 when 488 miles were built. However, the total for 1932 will exceed that a little. Last year 953 miles were built.

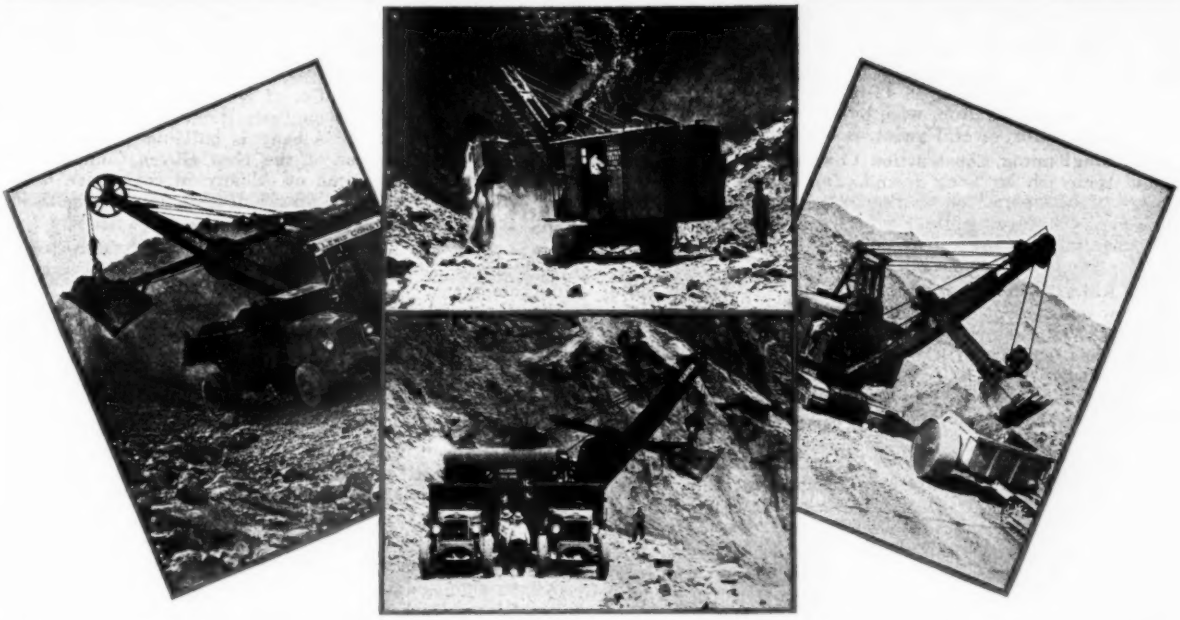
The center-lift span of the **Albany-Rensselaer bridge** has been completed with the exception of the control house at the top of the lift span and the installing of the lift machinery. The movable lift span will weigh nearly 3000 tons and will require two 1500 ton counter-weights to offset this weight, in addition to the lifting mechanism. The lift span will be ready to operate about the middle of December.

John Arborio, Inc., of Poughkeepsie, was low bidder on 6.5 miles of concrete in Ulster county. This job involves 165,000 yards of excavation.

Claude Donohue, Inc., of Kingston, is stepping on it with his job at Hampton. The Walkill Crushed Stone Co. Inc., of Whitehall is furnishing the crushed stone for the bituminous macadam pavement.

E. J. Anderson, Glens Falls, is tearing some big chunks out of the Adirondack Mountains between Wells and Wevertown on his 15 mile job in Hamilton and Warren Counties. This job called for preliminary grading and a gravel sur-

For your convenience in writing to The Wellman Engineering Co., you will find a card bound in this issue.



An Economical Wire Rope for Shovels

There are many reasons why "HERCULES" (Red-Strand) Wire Rope is an economical shovel rope, one of which is that it is the correct combination of strength, toughness, flexibility, elasticity and resistance to wear. No one quality has been overdeveloped at the expense of some other.

Construction is also an important factor, and "HERCULES" (Red-Strand) Wire Rope is furnished in a wide range of types and designs, and each is made according to our special methods of manufacture.

—And the same qualities that make "HERCULES" (Red-Strand) Wire Rope an economical shovel rope also make it a money saver on cranes, derricks, dredges, hoists, excavators and all other types of heavy duty material handling equipment. Why not give it a chance to show you what it can do? Measure its worth by its actual performance. Try it on your hardest work and keep a record of its relative cost "per unit of work done".

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1857 — SEVENTY-FIVE YEARS IN BUSINESS — 1932

For your convenience in writing to A. Leschen & Sons Rope Co., you will find a card bound in this issue.

Shots From the Firing Line— *Continued*

face. The excavation amounted to 600,000 yards. Mr. Anderson has two Lorain 1¼ yard machines, one P&H 1½ yard and a Bucyrus-Erie 42-B, 1½ yard steamer doing the work. Jack Hamilton, who, by the way, has been pulling the levers for several years, is operating the 42-B.

The Binghamton Construction Company has about completed their job on Long Island. Don Davis has been in charge of all operations on the Island and in the vicinity of New York City, while Fred Davis has charge of the Binghamton Company's upstate work. Joe Cox has charge of their Binghamton office.

The Kalman Steel Company has moved its Albany office into new quarters at 103 Washington Avenue. The Kalman Company has adjoining offices with L. L. Gowdy, Inc., Bill Friday has charge of the Kalman office while George Heiner plays the outfield. Mr. Friday and Mr. Heiner are more than satisfied with their new quarters and extend an invitation to the contracting trade to visit them at the new address.

D'Onfro Bros. Contracting Co., of Leominster, Massachusetts, is putting the finishing touches on their Tupper Lake contract. Dan D'Onfro has been on the job personally with his able assistants, Joe D'Onfro and Frank McCarty.

Pierce Law of Law Bros. Const. Co., Herkimer, spent several days in the Adirondacks during the deer hunting season. Mr. Law stated before he left it was going to be a bear or a buck and maybe both. Law Bros. have completed their contract in Oneida County.

Clarence Rose of Binghamton, went upstate after a deer during hunting season this Fall. His job at Masonville has been completed.

Adams Brothers Const. Co., of Glens Falls were awarded the bridge job at Whitehall, and are working now on the abutments. They are using a Lorain 75 crane on this job.

Bruno Trimpoli of Schenectady is low bidder on a water intake project for the City of Saratoga Springs.

The Hagedorn Const. Co. of Lake Placid, were low bidders recently on two jobs in Pennsylvania.

The New Haven Const. Co. of New Haven, Connecticut, is making rapid progress on their Rensselaer County job. M. R. Ingraham, Inc., of Albany is building the drainage structures. Louis Deflese of the New Haven Company is spending considerable time at Albany in connection with this job. Al Johnson is in charge of the Ingraham portion of the job.

The Lane Construction Co. had a new Bucyrus-Erie 16-B shovel shipped recently to their Ulster County job near Montgomery.

The LaSala-Mason Construction Corp. has started operations at Oneonta, where they have the contract for the new State Hospital there.

CHRIS HANSON

It is with deep regret that we report the accidental death of Chris Hanson of Troy, on November 10th. Mr. Hanson was driving west on Route 5 near Herkimer, with Mrs. Hanson, when the accident occurred. Mr. Hanson was well-known among the New York State contractors and his loss will be felt by all who knew him.

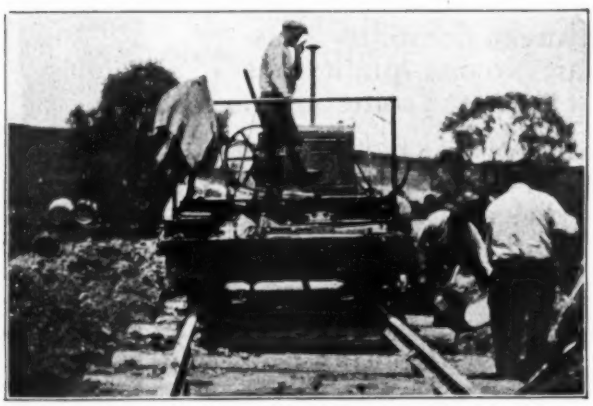
At the bidding by the State Department of Public Works at Albany on November 15th **M. C. Sellig Company, Inc.**, of New York was low with $54,846 on several sections of the Southern State Parkway in Nassau County. **John Torturo Company** of Yonkers took an I-Beam bridge in Steuben County for $6,331. **B. Perrini & Sons, Inc.**, of Framingham, Massachusetts bid low on C. H. 1948 in Nassau County with $111,597 for 2.52 miles. CH 1950 consisting of 6.62 miles in Columbia County brought out some close bids with Santa DeMichael of Wevertown $120 low at $125,275. **Roadway Trucking Corporation** of Williamsville bid $202,173 for low on 6.53 miles in Erie County. $138,288 by **Warren Brothers Roads Company** of Cambridge, Massachusetts, was low on 5.1 miles in Monroe County.

New Jersey Notes

The Church Brick Company announce the removal of their office from the Broad Street Bank Building, Trenton, New Jersey to 403 Farnsworth Avenue, Bordentown, New Jersey.

Bids will be received by the **Board of Chosen Freeholders** of the County of Monmouth on December 7th for construction of Section 3 of State Highway Route 36 from Atlantic Highlands to Seabright. In the 3.113 miles involved there is 361,373 cubic yards of earth and 12,450 cubic yards of soft rock excavation. The work also includes 80,766 square yards of 9-inch reinforced concrete paving, 216 square yards of granite block and 64 tons of bituminous concrete.

Sign in a Texas restaurant—"If the steak is too tough for you, get out. This is no place for weaklings."



A Machine for Shifting and Raising Your Track

If you are operating a quarry or open pit mine, engaged in a construction job where track must be raised and shifted frequently, here is a money saving investment. It is no longer necessary to maintain a large labor gang for this work. No longer need there be delays to your other operations. This machine and a few men will do the work, saving you time and money. If you shift or raise track, you need this machine.

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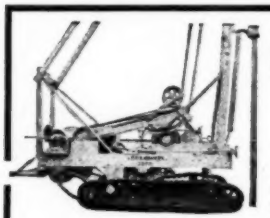
THE NORDBERG PATENTED TRACK SHIFTER



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and eat up profits. Quick moving often means steadier drilling. Owners of Loomis Full Length Crawler Mounted "Clipper" drills report great satisfaction in their work.

Size 44 "Clipper" comes equipped with steel frame; steel or wooden mast, wire or manila line.

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THE cheerful bark of his first "Caterpillar" Diesel Tractor was music this Pennsylvania coal-stripping contractor liked to hear. It would hit the lowest notes on his economy program without missing a beat. It turned a surprisingly small quantity of cheap fuel oil into the biggest, most determined pull he'd ever seen. Its traction and stamina confirmed his faith in "Caterpillar" products—it seemed to thrive on the combination of heavy loads, long hours and tough going.

So he soon bought a second "Caterpillar" Diesel Tractor. And now the two are making "close harmony"—harmony that's being listened to by power users far beyond the Pennsylvania mountains!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.
Track-type Tractors Combines Road Machinery
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Prices—f. o. b. Peoria, Illinois

FIFTEEN . . .	$1100	THIRTY-FIVE .	$2400
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DIESEL	$6500		

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TRACTOR

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Shots From the Firing Line — *Continued*

Virginia Notes

By M. L. HATCH

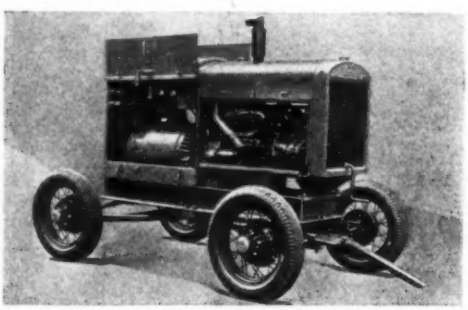
A Virginia State Highway letting was held in Richmond October 25th involving ten projects. The counties in which the work will be done are Stafford, Prince William, Scott, Amherst, Louisa, Fairfax, Wythe, Halifax, Norfolk and Botetourt. Approximately 620,253 cubic yards of excavation are involved. Another letting was held November 9th.

J. S. McCanless of Middleburg, formerly of Mountain City, Tennessee, has his Bucyrus-Erie GA-2 machine at work on a road project in Greene County, near Barboursville. This project involved 100,000 yards of excavation and Mr. McCanless reports that he has dug approximately 25,000 yards in twenty-five 10-hour working days. With his Gas+Air he is using twelve 2-yard dump wagons with three-mule hitch. This shovel is over two years old, but Mr. McCanless says that nothing can touch it for profits in shovel work.

C. S. Luck & Sons of Richmond were awarded a contract recently in Amelia and Powhatan Counties for the construction of two miles of soil, involving 46,500 cubic yards of excavation, on which they have their Gas+Air shovel purchased in December, 1926, and she is still going strong.

The Department of Highways reports that road work will not be held up during the winter months, but will be pushed actively to furnish jobs for the unemployed.

Skyline Drive in the Shenandoah park area of Virginia has been opened between Panorama on the Lee highway and Skyland and Crescent Rock. This project was constructed at a cost of more than $1,000,000 this year by the Federal Bureau of Public Roads. At the Panorama approach to the drive is a 700-foot natural rock tunnel, which is one of the engineering marvels of the project. It is described as the greatest museum of natural beauty in the country and opens a panorama of scenic views unrivalled in the United States or elsewhere.



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The P & H-Hansen is easy to move, light, compact, and inexpensive. Powered by direct connected gas engine. One adjustment controls the welding current, yet the capacity of the machine will handle all types of ordinary repairs such as resurfacing dipper teeth, repairing broken castings, structural parts, and gear teeth.

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P&H-HANSEN ARC WELDER
AMERICA'S FINEST FASTEST WELDER

Maryland Notes

D. C. McAleer, General Contractor, advises that he has moved from 703 Lexington Building, Baltimore, Maryland, to Joppa Road and Division Avenue, Towson, Maryland.

Ohio Notes

Anderson-Campbell Company has moved from 4 Germania Building, Jackson, Michigan, to 899 Spencer Street, Toledo, Ohio.

Near McConnelsville on the new road that will connect Marietta direct with Columbus this Caterpillar Fifty and Athey Wagon haul from a Lorain 75-B. Ray Strawser Inc., of Columbus is the contractor.

Detroit and Vicinity

By CLYDE B. DAVIS

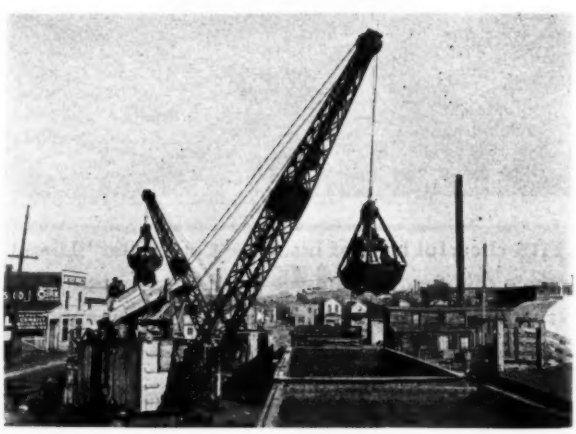
Immediate start on the Huron Shore State Road in Cheboygan County was ordered by Grover C. Dillman, State Highway Commissioner, early in November. The work includes brushing, grubbing and grading sections between Cheboygan and the Presque Isle County Line.

A contract for the dredging of Fighting Island Channel in the Detroit River at a cost of $67,754, awarded to Blanck & Gagaro Co., Inc., of Detroit, was approved October 29 by Maj. Gen. Lytle Brown, Chief of the Army Engineer Corps at Washington, D. C.

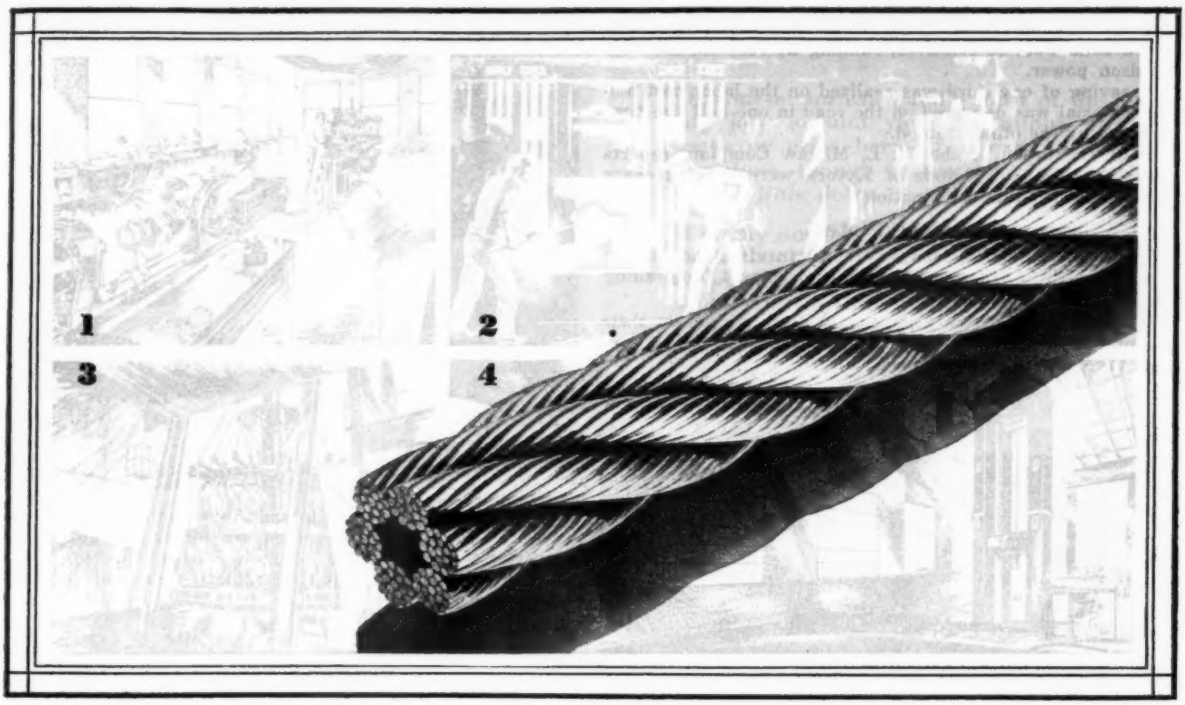
Wayne County roadbuilding has been going on extensively for eight months. It has included the building of Lake Shore Drive through Grosse Pointe Park; three miles of 30-foot concrete on Ford Road; Outer Drive from Dix to Fort, which has been concreted on one side only; Outer Drive from Seven Mile Road to Grand River Avenue; widening of Michigan Superhighway through a section of Dearborn, Grand River Superhighway through Redford and the Gratiot Avenue widening in downtown Detroit.

Indiana Notes

By IVAN GROSVENOR



State road 27 near Richmond required 11 miles of Kyrock finish. This material was being steam heated in the cars and hand shoveled into the waiting trucks. W. L. Magaw Company, who furnished the material, looked for a more efficient method and called in the services of the two Bucyrus-Erie outfits shown above from Iliff Brothers of Richmond. The Kyrock was hoisted from the cars by the Gas+Air clamshells and put through a grinder instead of being heated. A Rumley separator-type grinder, beneath the hopper which is seen in the picture, was used with 18 bars



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We have made very definite claims regarding Roebling Rope.

We have asserted: (a) that the safety of Roebling Rope is *unsurpassed;* (b) that NO wire rope, regardless of make or construction, will show *lower* general-average operating cost; (c) that Roebling Ropes, incorporating this safety and economy, can be obtained in types and constructions *most suitable* for every wire rope need.

In the first place, these claims are founded on the actual performance of Roebling Rope. Secondly, they are made possible by:—

1. Constant research carried on by the Roebling Laboratory, one of the country's finest, most completely equipped research units.

2. Roebling Acid Steel, custom-made in *small* open-hearth furnaces. Acknowledged by the steel industry to be the finest rope steel made.

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4. Unequalled testing facilities.

When in the market for wire rope, it will pay you to keep these FACTS in mind. They are assurance of utmost wire rope safety and minimum wire rope service cost.

JOHN A. ROEBLING'S SONS CO., TRENTON, N.J.

Wire · Wire Rope · Copper and Insulated Wires and Cables
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JOHN A. ROEBLING'S SONS COMPANY

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Shots From the Firing Line — *Continued*

and a double set of concaves, running at 1000 R.P.M. with Fordson power.

A saving of one-third was realized on the labor cost and the material was delivered on the road in one-half the time required by the other method.

Paul Teegarden of the W. L. Magaw Company reports that from 200 to 230 tons of Kyrock were handled every ten hours with this combination.

Illinois Notes

Scharl Construction Company of Evansville, Indiana, on their bid of $126,818, was awarded the contract for grading Section 115A in Hardin County.

Krueger Construction Company of Park Ridge, on their bid of $72,030, was awarded the contract for grading Section 114A in Gallatin-Hardin County.

Minnesota Notes

At the **Walter Stussy** gravel pit near Rice Lake, a Caterpillar tractor and LaPlant-Choate scraper feed the belt-driven conveyor outfit which carries the gravel to the crusher.

Iowa Notes

By H. C. EMERY

Operator Sullivan sends us the above picture of the Bucyrus-Erie Gas+Air he is operating for the **Hughes Construction Company** of Des Moines. Mr. Sullivan comments that this hustling shovel is about six years old and still going strong.

St. Louis and Vicinity

By A. J. KOENIG

WALTER M. PETERS

Walter M. Peters, 53 years of age, vice-president of Bilhorn, Bowers & Peters Inc., died October 30, 1932. Mr. Peters was formerly connected with the engineering department of the Burlington Railroad and the Woods Bros. Construction Co. of Lincoln, Nebraska.

The St. Louis-Kansas City Short Line Railroad has asked the Interstate Commerce Commission to approve its application for a three-year loan of $35,000,000 from the Reconstruction Finance Corporation to construct a double-track railroad between St. Louis and Kansas City, Missouri. The company, incorporated in 1924, plans 472 miles of main line and forty miles of siding and yards.

Bids will be opened December 5th at Springfield, Illinois, for the construction of two dams at Lake Springfield. Estimates on the cost of construction of the dams place the amount between $600,000 and $700,000.

Webb-Boone Paving Co. was low with a bid of $13,042 for the paving of Halls Ferry traffic circle near St. Louis.

Nineteen bids were received by the Missouri State Highway Commission for the construction of a highway bridge across the Osage River in Miller County, Missouri. M. E. Gillioz was low bidder with a proposal of $104,224.

One of a Family
all famous for service

ing a real hard digging job.

Class "K" is just the bucket for digging through surface soil and clay, for excavating loam, sand and shale, for sewer work.

HAYWARD Buckets are noted for service. Hayward's Class "K" Clam Shell is no exception. It is a *real bucket* for doBulletin No. 654 gives interesting operating and construction details; also sizes weights and dimensions of the Hayward Class "K" Clam Shell. On request.

THE HAYWARD COMPANY, 52-54 Church St., N. Y.

Hayward Buckets

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EVERY WIRE ROPE USER SHOULD READ THIS BOOK

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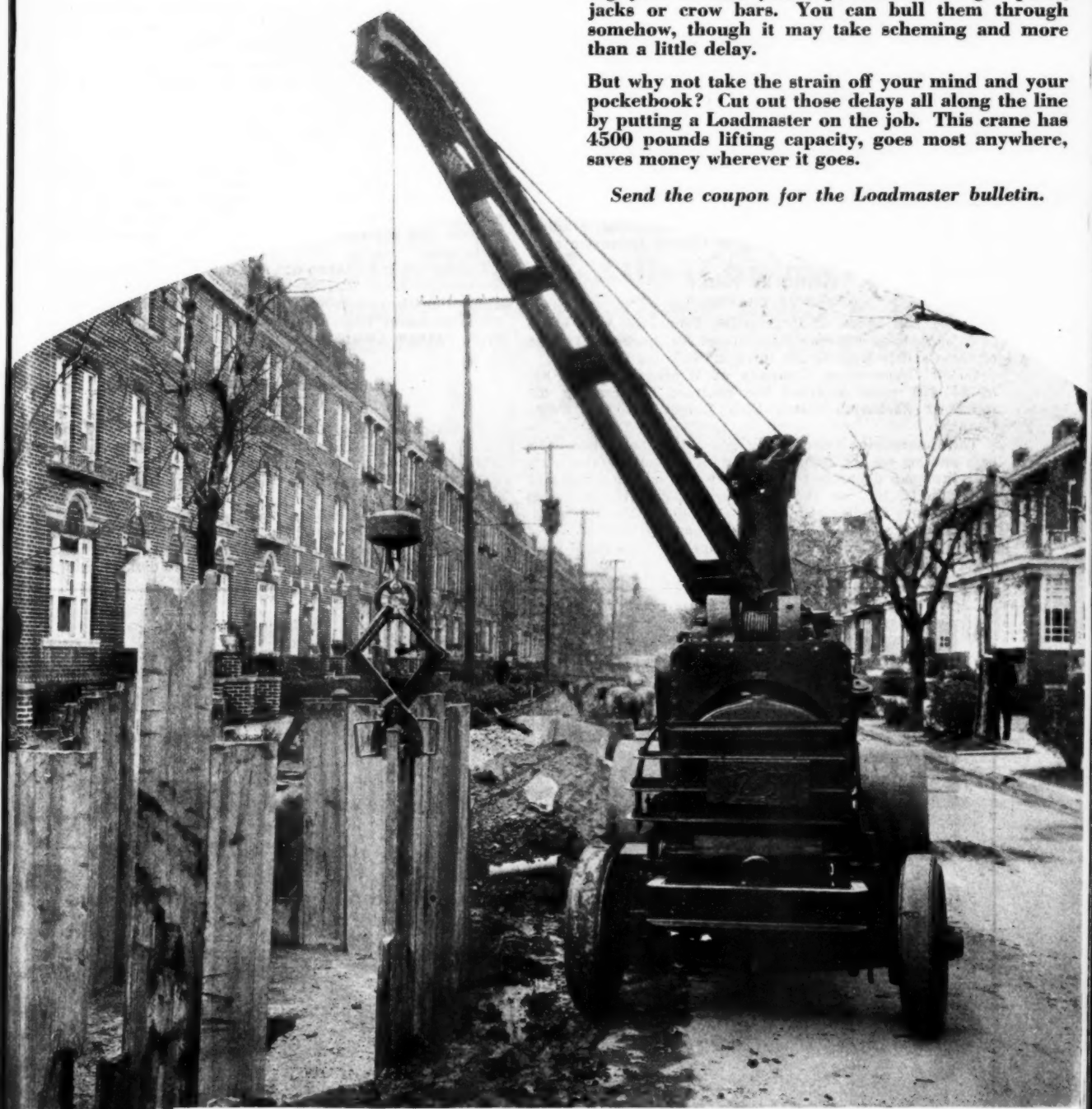
Of course you *can* handle most of the awkward lifting jobs around your operations with gin poles, jacks or crow bars. You can bull them through somehow, though it may take scheming and more than a little delay.

But why not take the strain off your mind and your pocketbook? Cut out those delays all along the line by putting a Loadmaster on the job. This crane has 4500 pounds lifting capacity, goes most anywhere, saves money wherever it goes.

Send the coupon for the Loadmaster bulletin.



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Send along my copy of the new book on Loadmaster.

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BUCYRUS ERIE

LOADMASTER

Shots From the Firing Line—*Continued*

Bids for 159 miles of paving, 42 miles of grading and 20 bridge sections were received by the Illinois Highway Department on October 26th. Among the low bidders were Lefferdink Construction Co., Nelson Construction Co., R. McCalman, Arcole Construction Co., M. C. Robinson, and Illinois Steel Bridge Co.

The Maxon Construction Co. was awarded contract for the construction of locks on the Mississippi River in Lewis County, Missouri. Their bid was $794,488.

John Morrison Construction Co. was awarded contract for 4000 feet revetment work at Fort Chartres on the Mississippi River.

The Reconstruction Finance Corporation has approved a loan of $250,000 for the construction of an earth dam for 800,000,000-gallon reservoir and 8 miles gravity pipeline at Hobart, Oklahoma.

F. E. Botts has contract for clearing, grubbing, grading and culverts on 2.5 miles on Woods Chapel Extension road at a cost of $21,340.

Kentucky Notes

By W. E. CHAMBERS

Young and Lyons of Rogersville, Tennessee, with a bid of $53,533, were awarded the contract for grading 3.1 miles of the Carlisle-Millersburg Road in Nicholas County.

Codell Construction Company of Winchester, on a bid of $41,476, were awarded the contract for grading 6.1 miles of Zachariah-Torrent-Pine Ridge Road in Wolfe County.

The Commission rejected all bids on the following projects and set up the following amounts for doing the work with highway department machinery and labor: 5 miles of grading, $38,166, on the Williamsburg-Pineville Road in Bell County; 9 miles of grading, $45,945, on the Hartford-Livermore Road in Ohio-McLean Counties; 6.6 miles of grading, $14,545 on the Trenton-Tennessee Line Road from Todd County.

Lewis and Kelly of Harlan, on a bid of $11,056, were awarded the contract for grading 5.1 miles of the Russell Springs-Somerset Road in Casey County.

Dempster & Jernigan of Madisonville, on a bid of $41,219, were awarded the contract for grading 5 miles of the Monticello-Whitley City Road in Wayne County.

Zimmerman & Zimmerman of Wauwatosa, Wisconsin, on a bid of $160,543, were awarded the contract for a sewer on the Trevalian Way and Beals Branch.

S. A. Healey of Dubuque was awarded the contract for a sewer in Southwestern Outfall in Louisville on a bid of $789,000.

By CLYDE B. DAVIS

A surveying party from the United States Engineer's office in Louisville arrived here early in November to prepare for work to start early in December on the replacing of the **Green River lock and dam** at Glenmore, Warren County. Between 400 and 500 men will be employed on the job about one year. The cost of the job will be about $1,200,000. The surveyors are to determine if more land must be bought.

Curves are to be taken out and new roadbeds laid for the Burkesville Road started the first week in November by about 100 Glasgow men. The road is to be of rock asphalt with macadam base. The contract was awarded to the **P. B. Putnam Company,** of Fort Wayne, Indiana.

River Notes

By W. W. WHORLEY

New Orleans

New Orleans took bids December 1st on 126,000 yards on the Red River levees in the vicinity of Alexandria, Louisiana. The jobs are all comparatively small, running from 9,500 to 45,000 yards, and call for completion in from 30 to 60 days.

A **3,200,000-yard letting** was held at New Orleans on November 28th. Three million yards of this was in the Red River, Atchafalaya and Bayou Boeuf Levee District on the Alexandria-West Levee. The work was divided into five

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Shots From the Firing Line — *Continued*

items with time of completion for each running 300 days. The other 200,000 yards consisted of eight small items in the Barataria Levee District each to be finished in 30 days.

A correction in the announcement of awards at New Orleans on the October 11th reports the award of 95,000 cubic yards in the Upper Darrow Levee to **Grasser Construction Company** of New Orleans instead of the Moore Construction Company of Liberty, Mississippi.

Bids were opened November 16th by the **Tensas Basin Levee District** at Rayville, Louisiana, for 136,000 yards in Desha County, Arkansas, and Ouchita and Caldwell Parishes, Louisiana.

New Orleans took bids November 10th for 77,000 yards in the **Reid-Bedford Canal** four miles below Delta, Louisiana. The canal is 11,700 feet long with a bottom width of 18 feet and average depth of 6½ feet.

Memphis

At the Memphis Letting of 3,039,000 yards in the Lower St. Francis Levee District on October 29th, **Driver Construction Company** secured 537,000 yards near Lambethville, Arkansas, at 14.8 cents. **Henry Hughey Company** took 288,000 yards near Jericho at 15.4 cents. **S. K. Jones Construction Company** bid low of 14.55 cents for three sections of enlargement totaling 854,000 yards near Jericho and Howard, Arkansas.

Four sections starting about 5½ miles south of Butler, Arkansas, and extending downstream about 8⅓ miles to a point about 1½ miles south of Golden Lake **were bid at the letting** but, at this writing, definite awards have not been made. **The U. S. Engineers** bid 12.63 cents on R-188 A and B totaling 734,000 yards and 10.88 cents on R-191 A and B totaling 626,000 yards. **Thomas F. Shea and Hughey Brothers** of Memphis bid 15.4 on R-188-A totaling 368,000 yards while **J. T. Pollard-Council & Lewy** bid 12.2 cents on combined R-188-B and R-191-A and B totaling 992,000 yards. A decision as to whether the contractors or the government will do this work is expected shortly.

This letting was the third at Memphis with funds from the Federal Relief Act. Time limit for completion of the above jobs is 375 calendar days.

The Delta Construction Company of Lake Cormorant, Mississippi, was low with 10.87 cents on 195,000 yards in the St. Francis Drainage District in Arkansas in the bidding at Memphis November 3rd. The work consists of 11,700 lineal feet of levee embankment to be completed in 90 days.

At Memphis November 3rd, **B. K. Walters** of Manhattan, Kansas, secured 10,000 cubic yards of earthwork at 28 cents on the Neosho River near Council Grove, 30 miles southwest of Topeka.

Vicksburg

Forcum-James Construction Company of Dyersburg, Tennessee, received award in the Vicksburg District for 92,000 cubic yards refilling of riverside dredge pits on the east bank five miles west of Scott, Mississippi.

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WIRE ROPE can really be until you try "Flex-Set" Preformed Yellow Strand on your excavating machinery. Made of tested, *selected* wire.
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P-48

Boone & Webster, Inc., were low with 11.9 cents on 600,000 yards in Farelly Lake Levee District five miles southwest of Gillett, Arkansas, bid at Vicksburg, November 3rd.

St. Louis

St. Louis received bids November 12th for 600,000 yards to complete the original contract for enlargement in the Big Swan Drainage and Levee District on the Illinois River in Scott County, Illinois.

Louisville

The U. S. Engineers office at Louisville will take bids on December 7th for a new lock and dam No. 5 on Green River about 15 miles north of Bowling Green, Kentucky. Included is 1,500 linear feet of enclosed work in cofferdam, 48,000 yards of concrete, 193,000 yards common excavation, 3,700 yards of rock excavation, 96,000 feet of timber piles, 46,000 square feet sheet steel piles and 900,000 pounds of metal work.

Trinity Farms Construction Company of Dallas was low bidder on 3,650,000 cu. yds. of levee work in the Lower St. Francis Levee District at the Memphis office on October 18.

On the bids which were opened by the Vicksburg Engineer Office on October 20th, **Carl Erickson** of Pinconning, Michigan, was awarded the contract for constructing 510,000 cu. yds. of earthwork at West Monroe, Louisiana, with his bid of 10.98 cents.

"Roll on, Mississippi," is the song this battery of dirt moving equipment sings down on **Jones & Rodgers'** job near Tululah, La.

Florida Notes

By W. W. WHORLEY

McWilliams Dredging Company of New Orleans has been awarded contract by the U. S. Engineer Office at Jacksonville for constructing 4,615,000 cu. yds. of earthwork along the Intracoastal Waterways from the St. John River to Tolomato River, a distance of 22 miles. The price was 6.6 cents per yard for a total of $304,590.

Texas Notes

The Interstate Commerce Commission has indicated willingness to authorize construction by the Gulf & West Texas (subsidiary of Southern Pacific) of a line connecting with the Kerrville branch of the San Antonio & Arkansas Pass near Fredericksburg Junction and extending north 28.6 miles to a connection at Fredericksburg with another new line of the G. & W. T. previously authorized. The Gulf & West Texas has been negotiating to buy an existing line owned by the Fredericksburg & Northern between these points but the latter company has so far been unwilling to sell at the price offered. If continued negotiations fail to bring an agreement it is probable the new construction will be put under way soon.

New Mexico Notes

At the letting at Santa Fe on November 17th **New Mexico Construction Company** of Albuquerque was low on 125-A and F. L. H. P. 1 with bid of $169,731. **H. C. Lallier** of Denver bid low of $127,204 on 100-B. **T. J. Tobin Construction Company** of Albuquerque had the low bid of $135,237 on 131-B. On project 164-B **E. J. Maloney** of Santa Fe was low at $88,183.

"But I don't know what to do," said the wife, learning to drive.

"Just imagine that I'm driving," replied her spouse.

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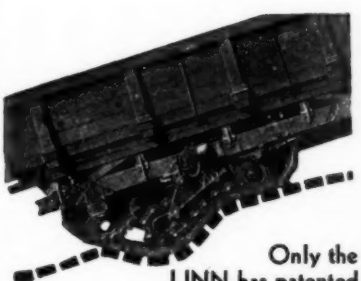

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Shots From the Firing Line — *Continued*

Colorado Notes

By H. M. BIBAUD

A loan of $1,125,000 to the Twin Lakes Reservoir and Canal Company of Crowley County to construct a big water diversion project near Leadville was approved by the Reconstruction Finance Corporation, November 10. The big project will start before January 1, 1933. The loan will be sufficient to allow for the tunneling under the continental divide near Leadville and to build a system of collecting canals along the Roaring Fork river. The plan is to bring the Roaring Fork water through the divide and store it in Twin Lakes on the headwaters of the Arkansas river. The water as released would be used for irrigation in Crowley County west of Pueblo. John H. Cowden, president of the Twin Lakes Company, and O. R. Smith, engineer, were in Washington over three weeks consulting the R. F. C. concerning the loan and construction plans. R. J. Tipton, consulting engineer, and others attended the conference.

Arthur C. Shields, general manager and vice-president of the D. & R. G. W.; M. G. Kennedy, engineer, in charge of the job for the contractors; A. H. Baer, Denver representative of the contractors and C. R. Shinn, general superintendent of the Morrison-Knudson company of Boise, Idaho, one of the three contracting firms, were on hand in Eagle county to see the first dipper of dirt moved in the construction of the **Dotsero Cutoff.** This job will give Denver its first direct transcontinental railroad line by linking the Denver and Rio Grande Western line at Dotsero with the Denver and Salt Lake railroad at Orestad.

Contractors on the job include the **Utah Construction Company, W. A. Bechtel Company** and **Morrison-Knudson Company.** The above companies bid approximately two million dollars on the work of preparing the right-of-way, drilling tunnels and erecting bridge abutments. The loan by the R. F. C. totaled $3,850,000 to finish the cutoff.

Oregon Notes

La Dee Logging Company of Portland with a bid of $152,260 were awarded the contract for grading 3.85 miles of the Humbug Mountain-Ranger Station Section of the Wolf Creek Highway.

E. C. Peck & Company of Aberdeen, Washington, were awarded the contract for grading 8.17 miles of the Flowers Gulch-Long Creek Section of the Pendleton-John Day Highway. The bid was $97,476.

Kern & Kibbe of Portland with a bid of $132,558 were awarded the contract for grading 18.9 miles of the Odell-Lake-Walker Mountain Section of the Willamette Highway.

Fred H. Slate of Portland was awarded contract for grading 0.89 mile of the Manzanita Section of the Oregon Coast Highway. His bid was $33,075.

Los Angeles and Vicinity

By H. L. LIVINGSTON

Bids will be received up to 2 p. m., December 19th, by the Board of Supervisors, Hall of Records, Los Angeles, for construction of **San Gabriel Dam No. 1.** This dam has been unsuccessfully bid several times previously. The dam, which is to be of the fill rock type, extends 270 feet above stream bed with very flat slopes on the down stream face. The capacity will be 70,000 acre feet. Bids will be received on ten different proposals which cover the entire work for the dam under proposal number one or subdivisions covering various sections under proposals number two to ten. The work involves 1,833,000 cubic yards of various types of excavation in the abutments, stream bed and cutoff trench. 144,185 cubic yards of excavation is required for the tunnels outlet shaft, miscellaneous open cuts and general backfill. The rock fill required totals 5,562,000 cubic yards and four quarry sites are available for furnishing this rock. About 900,000 cubic yards of stripping will be required and 1,800,000 cubic yards of quarry waste will probably be involved. 79,750 cubic yards of concrete of various classes and 7,675,000 pounds of reinforcing steel must be placed. Drilled grout holes total 75,800 lineal feet and various other work is required including the placing of gates, forms, trench racks, pipe, etc.

Bids were taken November 29th for the first section of the **Metropolitan Aqueduct.** The successful contractors will probably start work this month or early in January for the Los Angeles Metropolitan Water District, on this great project which is to bring water from the Colorado River to Los Angeles and the surrounding towns included in the district. The initial work will be the boring of the San Jacinto tunnel which will be approximately 67,400 feet long and of 16-foot horseshoe cross-section. Various legal difficulties have been placed in the way of the project by those who object to it but at this writing it would seem that these obstacles have been cleared away.

Construction will begin shortly on the $35,000,000 Golden Gate Bridge project in San Francisco following the award-

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ing of contract to the bidders listed below:

John A. Roebling's Sons Co., $5,855,000 for steel cables, suspenders and accessories.
Pacific Bridge Corporation, $2,935,000 for San Francisco Pier and fender and Marin Pier.
Barrett & Hilp, $1,859,854 for anchorages and piers of approach span.
Bridge Builders, Inc., $934,800 for steel superstructure, San Francisco and Marin approaches.
Eaton & Smith, $996,000 for Presidio approach road.
Chigris & Sutsos, $59,780 for Sausalito approach road.
Alta Electric & Mechanical Co., $154,470 for electrical work.

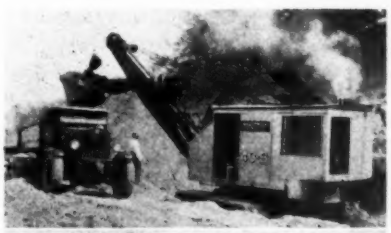
All bids for the paving of main span, side spans and approach spans have been rejected. The steel superstructure of bridge was awarded to McClintic-Marshall Corporation.

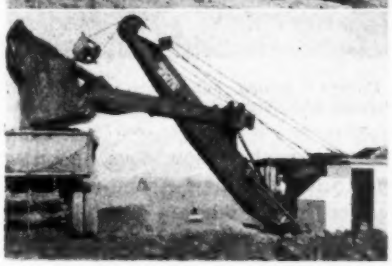
Basich Bros. Construction Co., who bid $328,956 to the California Division of Highways, has been awarded the contract for 4.7 miles of grading and concrete paving between Oregon Avenue and Whisman River road in Santa Clara County. This company has just about completed the contract for grading and paving a new highway between San Pablo and the Carquinez Bridge and will move their equipment from this job to Santa Clara County.

Hemstreet & Bell, Marysville, were low bidders to the Bureau of Public Roads for 3.84 miles of grading in the Sierra National Forest, being the lowest of 18 bidders. The contract is in the amount of $61,805, the principal item in this contract being 125,500 cubic yards of excavation.

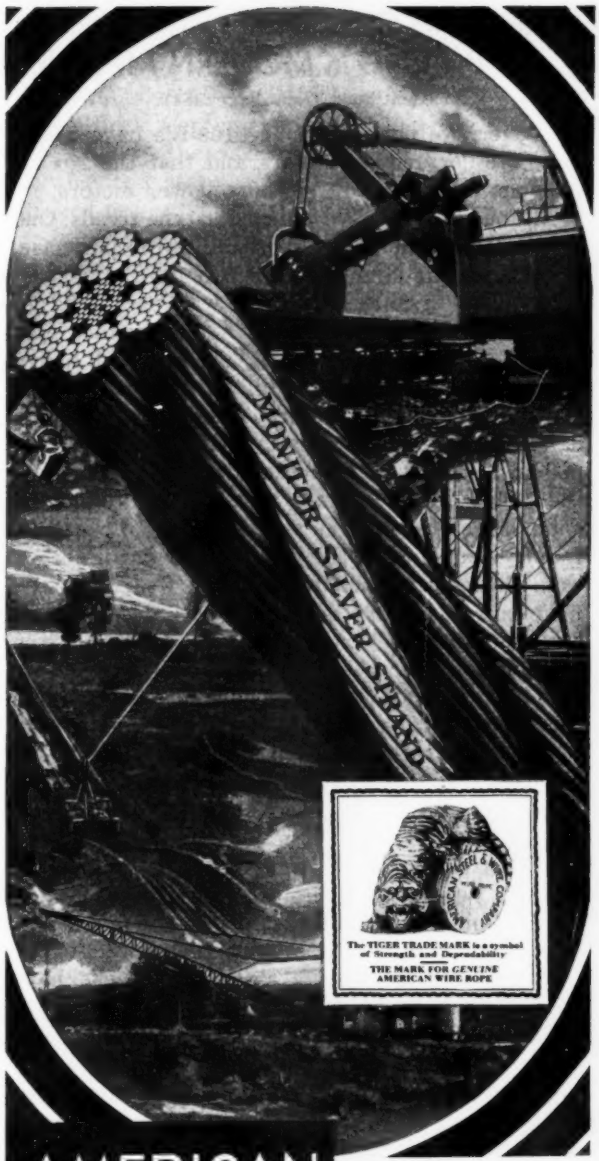
Contract in the amount of $511,127 has been officially awarded to the **Sharp & Fellows Contracting Company** of Los Angeles, who were the low bidder to the Bureau of Public Roads for grading 17.30 miles of highway in the Santa Barbara National Forest, Ventura County. This contract involves 990,000 cubic yards of Class "A" excavation and 50,500 cubic yards of Class "B" excavation.

By C. L. WADSWORTH





On the Baranca Street cutoff between Pomona and Covina, Griffith Company of Los Angeles is handling 400,000 cubic yards of excavation, using the above two Bucyrus-Erie 43-B Diesels. These shovels carry 1¾-yard dippers and are powered with Atlas-Imperial Diesel engines. Some of the cuts are about 90 feet deep and the digging is through very hard shale rock and adobe soil. The right-of-way is 100 feet and 40 feet of this will be paved with 9x7x9-inch concrete. The job is 7 miles long and is being carried through under the personal supervision of Vice-President John Holmstrom of the Griffith Company.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(Continued from Page 564)

once-over, we notice that the 100-B's have 2,300-volt, 175-horsepower motors and that the No. 37 Marions have 440-volt, 75-horsepower motors.

All four shovels have caterpillar-type treads. One of the Marions is now a spare, since the purchase, in 1928, of the second of the two 100-B Bucyrus-Eries. The first Bucyrus-Erie was purchased in 1927. We learn, also, the why of the inclined railway: it is used for hauling shovels and heavy crushing apparatus up the hill to the quarry floor.

Originally designed to produce 2,500 cubic yards daily, the Haverstraw quarry plant has been stepped up to produce considerably more than this, and the 100-B Bucyrus-Eries were needed to handle enough rock to keep the plant running to capacity. Inquiry brought out the fact that no repairs other than those occasioned by ordinary wear and tear have been necessary on the 100-B's, despite their strenuous use on very hard rock. Neither of the 100-B's has ever been pushed to the limit of its loading speed, but each has loaded into trucks more than 1,500 yards easily in 10 hours, and each yard of this trap rock weighs more than 3,500 lbs. in the loose. That's more than 5,250,000 lbs. in a day.

Why They Use Trucks Instead of Cars

A fleet of twelve 7½-ton AC Mack trucks with Phoenix 5-yard side-dump bodies (made by Easton Car & Construction Co.), hauls the rock for distances of 500 to 2,500 feet from the shovels to the primary crusher. Nearly all of the trucks have solid single tires, 36 by 7 on front and 40 by 16 on the rear. Eventually, according to Amos Bulson, truck mechanic, all trucks will be equipped with solid single rears because the dual rears have a tendency to pick up loose rocks, with consequent damage to tires and rims. None of these rock-hauling trucks carries a license, as all are used on the quarry floor, and never travel on public highways.

We notice three licensed trucks used for general utility around the plant. These are a 1½-ton Reo Speedwagon with a slat body, a 2½-ton AB Mack, and a 7½-ton RG Pierce-Arrow, the latter two with end-dump bodies.

There seemed to be no question among the men at the Haverstraw plant as to whether they preferred trucks or cars for hauling rock from the shovels to the crusher. The opinion was unanimously in favor of trucks on account of the greater flexibility and speed possible.

Knowing that trams have many desirable features, the writer asked Sterling Tomkins, a few days later, why he decided to use trucks instead of tram cars in the Haverstraw quarry, especially since he was using trams handled by the Woodford Electric Haulage System very successfully at the Verplanck's Point quarry of the New York Trap Rock Corporation. Mr. Tomkins explained that conditions at the two quarries are entirely different. In the Verplanck's Point quarry, a 40-foot height of quarry face is maintained as a maximum; the material quarried is limestone; the quarry face is not blown away, but the 120-B Bucyrus-Erie 4-yard shovel works constantly at a rock slope which extends all the way to the top of the quarry face. New blasts are fired before solid quarry face is exposed, and the gelatin is proportioned so it simply shatters the limestone and leaves it piled up about ten feet above its former top level. There is no flying about of rock projectiles, hence no need the rock is very heavy, and to shatter by vertical-effect blasting behind a cushion of sloping rock would mean the raising of 160 feet of rock — a method which would be prohibitively expensive and probably ineffective.

How the Trucks Are Routed to the Shovels

Well, let's get back to the floor of the Haverstraw quarry, where the trucks are scooting around. After a truck driver has dumped his load

Two's company and three's a crowd, but here's a crowd that Wayne Dykens, shovel operator, says is good for any company.

of rock in the primary crusher, how does he know which shovel to go to next? Easy! As he re-enters to move the shovel or tracks when a blast is fired because there is always a cushion of previously shattered rock between the solid rock of the quarry face and the floor of the quarry.

In the case of the Haverstraw quarry, he continued, there is a 160-foot height of quarry face; the quarry floor, after dumping his truckload at the primary crusher house, he passes by a large number card which tells him which shovel needs his kind attention next. The number card signaling system is under the control of a quarry foreman and has worked out very satisfactorily.

There is no place on the quarry floor where a truck cannot make top speed, and since full and empty trucks use entirely different routes, there

is no traffic congestion at any point. Dumping at the primary crusher is a matter of only a few moments. The full trucks enter in one side of the building and, when emptied, go out the other. At the crusher, an electrically operated hook pulls up

The trap rock at Haverstraw gives ideal breakage. General Electric motors furnish the power for the Bucyrus-Erie 100-B shovels.

one side of the truck body; the rock slides out of the truck body and down into the crusher hopper; the hook lowers the empty truck body, unhooks itself, and the driver goes on his way.

A Quick Trip Through the Crushing Plant

The flow sheet (over which the writer labored long but not prayerfully) shows what happens to the rock after it enters the primary crusher. In general, the crushing plant is of the gravity flow type, with the primary crusher at the quarry floor level—about 400 feet above the river—and the rest of the crushing, screening, storage and loading operations trailing off down the steep hill to the river. During its travels, a piece of rock crosses through a tunnel under one highway; travels across the West Shore railroad tracks on a bridge; crosses by another bridge over a highway; and rides out to the end of a long concrete wharf, where it is loaded on barges.

The plant can be operated in any weather, as all crushers, screens, conveyor belts, etc., are enclosed; the conveyor belts running in some cases through tunnels or in galleries. The rock runs through the plant in a series of steps, with a vertical drop to each crusher and a more or less horizontal conveyor to carry the material to the screens and crushers of the next unit in the series. Final screening to commercial sizes is handled immediately above the storage silos.

Shipments are by barge, by truck, or by belt conveyor (to a neighboring customer). No provision is made for rail shipment, although the plant is bisected by the West Shore railroad tracks. We stand and chat with Jay Pearce, the shipping clerk, down on the wharf, while the last few tons of rock sand are loaded onto one of the barges we saw being towed up to the wharf through the mist when we first approached the plant.

It looks and feels like good sand, very well graded. We are not surprised to hear that there is an excellent and growing market for this rock sand. Undoubtedly the reason is because the New York Trap Rock Corporation has devoted considerable research to the development of commercially desirable rock sand, and is now producing a controlled product instead of a haphazard by-product.

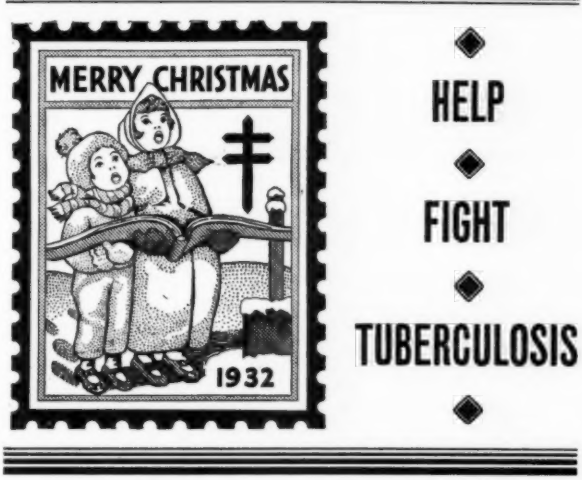
It's getting late in the afternoon and we must end our visit with the Haverstraw folks, but not before thanking the previously mentioned men, as well as the following members of the organization for their patience and courtesy: Ralph Owens, master mechanic; Alfred Chambers, foreman of No. 1 Mill; Michael Yonski, foreman of No. 2 Mill; Ernest Luther, foreman of No. 3 Mill; Wayne Dykens, operator, and Matthew McGuire, oiler, on No. 1 Bucyrus-Erie shovel; Benjamin Peterson, operator, and R. Avery, oiler, on No. 2 Bucyrus-Erie shovel; Roy Harris, operator, and J. Avery, oiler, on the Marion shovel; John DeBinskie, silo foreman; John A. DeBoyace, plant electrician; Thomas B. Bowie, storeroom keeper, and Harry Feeny, timekeeper.

From Old Timer John S. Kochtitzky, Jr.

(Continued from Page 569)

> pillar type mounted machine No. 19. We later sold the Walker and still have the Rood crawler. I inclose pictures of this machine. I have no pictures of the Walker. We shipped all operators from the north getting experienced men. The first winter was the last, they could not stand the damp cold which we have here on the Rice Fields.
>
> "One man stuck and has worked for us many years since. His name is Ed. Grytbak, Stuttgart, Arkansas."

Thank you, Mr. Kochtitzky. Let's have other anecdotes of the old timers from Old Timers. What about "Whiskey Bill" . . . are none of his old friends left? What about that second Cross machine built for Mathews as a back digger? *Watch for an interesting announcement to Old Timers in January.*



BOOK REVIEWS

"Economics of Construction Management," by J. L. Harrison, Division of Management, U. S. Bureau of Public Roads. First edition, 336 pages, 5½ inches by 8 inches, cloth hard binding. Gillette Publishing Company, 865 Daily News Building, Chicago, Illinois, publisher. Price, $3.75.

Mr. Harrison's book clearly indicates the fundamentals of economics in management and discusses each one in such a way as to leave no doubt how to make a profit and how to bid. He has treated bidding from the market point of view. He has treated records so as to disclose what records should do and show. His book is undoubtedly a valuable addition to the subject of construction management. Administration of a construction project is discussed as only one who has made a deep study of management and management problems can discuss it.

Following is a list of the subjects covered: The Origin of Profit, Financing Construction Work, Securing Business, Planning Operations, Purchasing the Materials Supply, Central Office Responsibility vs. Responsibility of the Job Management, Cost Accounts and Records, Production Cost and Expenses Other than for Production, Expense Items other than for Production, The Control of Expense Other than for Production, The Management of Production, Where the Plan of Operation May Fail, Units, Labor as a Factor in Cost, Materials, Operating Expenses, Depreciation, The Equipment Replacement Problem, Functional Adequacy and Dependability, The Value of Improvements in Equipment, Hauling, Financial Statements.

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Have 22 years' experience on general excavating and grading projects on gasoline, electric or steam powered machines. Can give best of references and can do own repair work. Will go anywhere. Present location Louisiana. Box 3605.

DRAGLINE-CLAMSHELL-SHOVEL OPERATOR

Have 20 years' railroad, quarry, drainage, levee and highway experience operating Bucyrus-Erie and Northwest shovels and draglines, gasoline, steam, Diesel and electric machines. Willing to go anywhere on any machine. Can furnish good references and do own repair work. Married. Present location, Indiana. Box 4101.

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DRAGLINE-CRANE-SHOVEL OPERATOR

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DRAGLINE—CLAMSHELL—SHOVEL OPERATOR

Have operated gasoline, electric and steam machines for past 15 years. Willing to go anywhere. Married. 36 years old. Best of references. Can do own repairing. Present location Minnesota. Box 3901.

SHOVEL OPERATOR

15 years' experience on electric, Gas+Air and steam machines on basement excavating; highway and railroad grading. Will go anywhere in U.S.A. Married. Age 35. A-1 references. Can do own repairing. Present location Pennsylvania. Box 3604.

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SHOVEL OPERATOR

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Vol. 26 DECEMBER No. 12

CONTENTS

Articles

Making Little Ones Out of Big Ones in Modern Manner.... 561
Bridge Builder Cuts Cost of Falsework 565
Highway and Building Congress January 16th to 20th.... 566
Electricity in a Modern Construction Camp..... 567
From Old Timer John S. Kochtitzky, Jr..... 569

Editorial

The Business Situation 568

Field Notes

Turnpike Sections 570
Dredging Contractor Held Liable for Damage by Seepage.. 570
Two Handy Substitutes for Calipers 570

Equipment You Ought to Know About

Western Shouldering Attachment 571
Caterpillar Stationary Diesel Ready 571
Gasket Compound Resists Hot Oil and Gasoline 571
Portable Plant Built in Units 572
Hydraulic Door Control Device 572

Shots From the Firing Line

How the States can use the $120,000,000 loan fund included in the Federal Relief Act for Federal Aid Roads.. 574
Motorist Gets Back More Than He Pays 574
New York State Highway Contractors Meet December 13th 574
Portland Cement Association Elects..... 575
Hawaiian Notes 575
Panama Canal Zone 575
Belgium 576
New York Notes 576
New Jersey Notes 578
Virginia Notes 580
Maryland Notes 580
Ohio Notes 580
Detroit and Vicinity 580
Indiana Notes 580
Illinois Notes 582
Minnesota Notes 582
Iowa Notes 582
St. Louis and Vicinity 582
Kentucky Notes 584
River Notes 584
New Orleans 584
Memphis 586
Vicksburg 586
St. Louis 586
Louisville 586
Florida Notes 586
Texas Notes 586
New Mexico Notes 586
Colorado Notes 588
Oregon Notes 588
Los Angeles and Vicinity 588

Book Reviews 592

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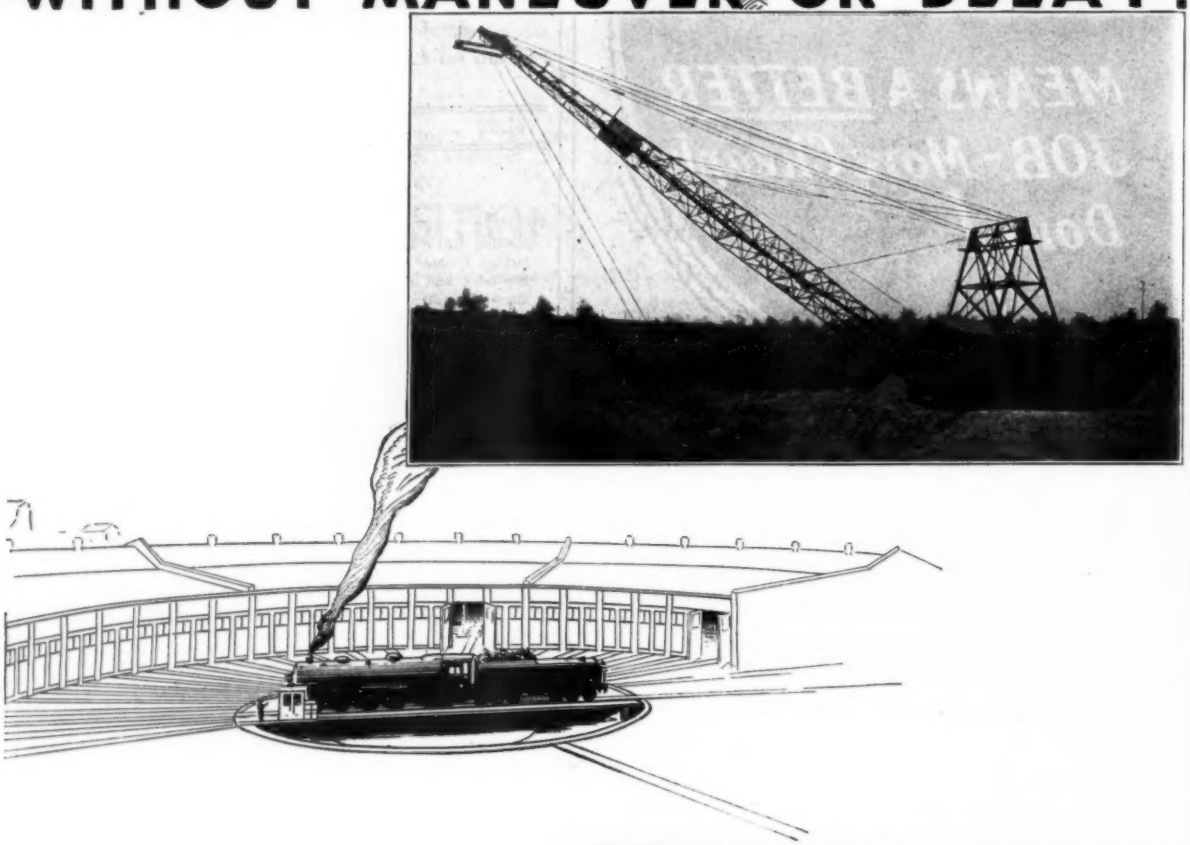
WITHOUT MANEUVER OR DELAY!



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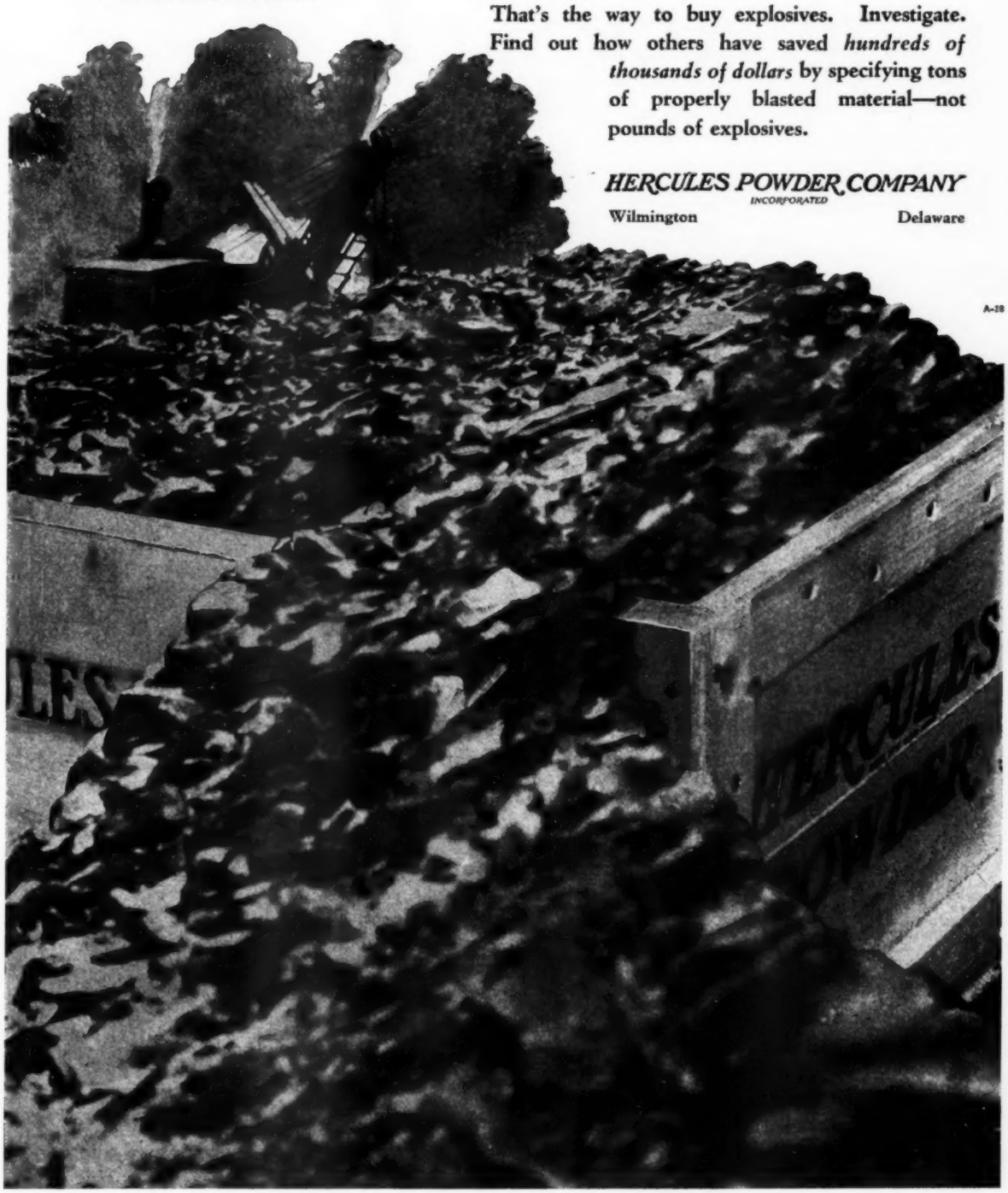

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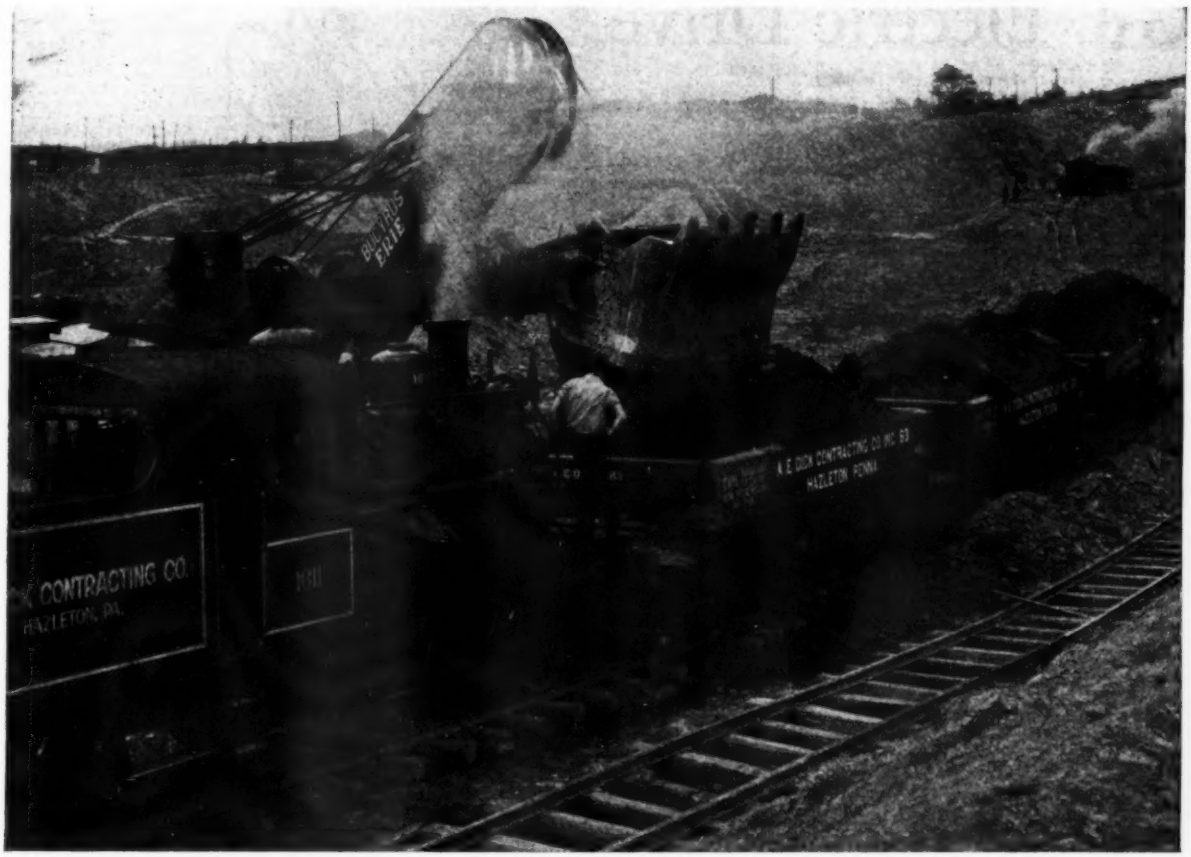

A train of 12-yard Western Drop Door Dump Cars at the Baltimore Colliery, Wilkes-Barre, Pa., where A. E. Dick Contracting Co. are engaged in removing several million cubic yards of overburden. The shovel, an electric 120-B Bucyrus-Erie, has a 4-yard dipper.

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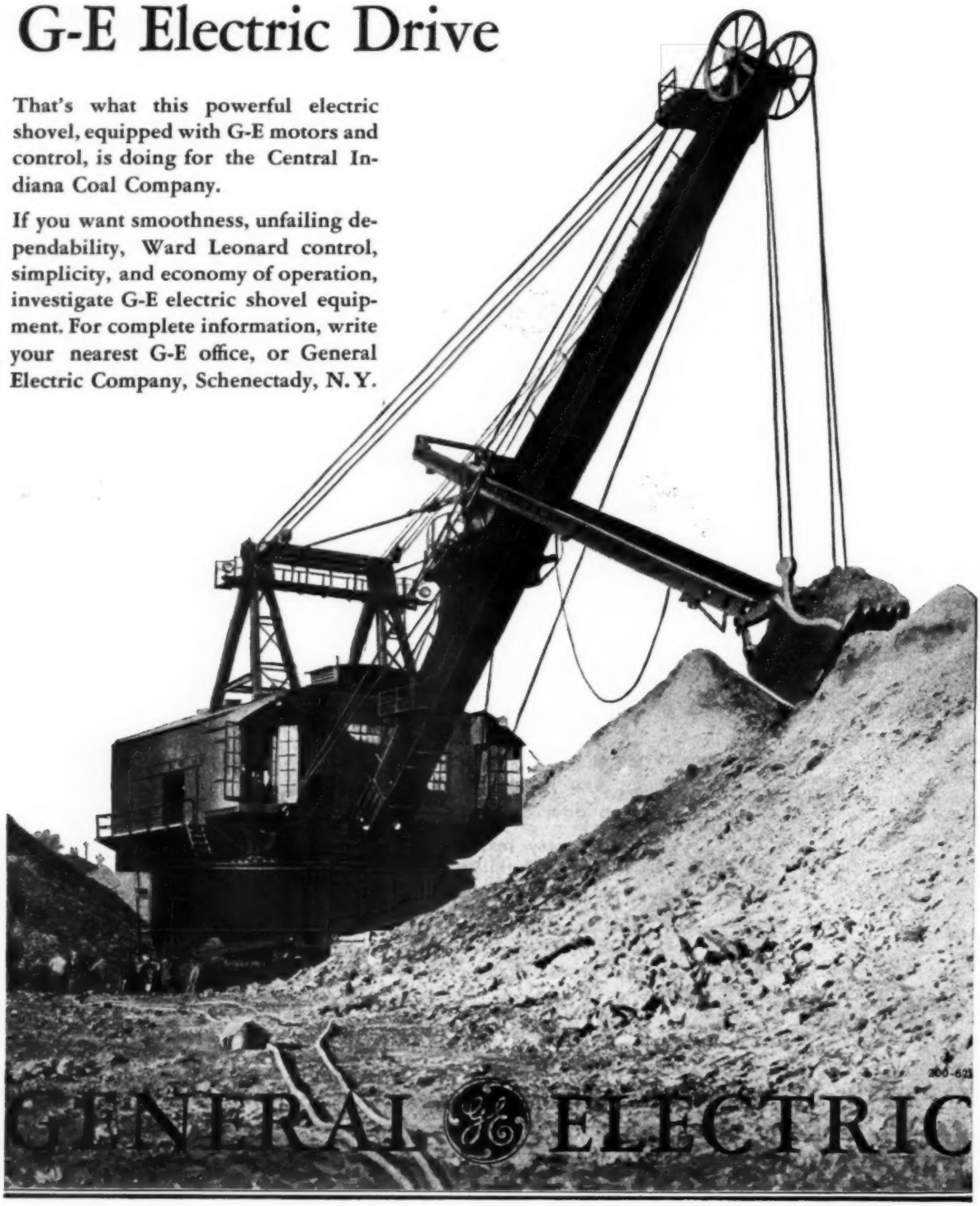

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Name .....

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BARGAIN

Bucyrus-Erie Type B number 1982, ¾-yard steam shovel on caterpillar mounting with dragline attachment. Ideal for Construction work or Placer mining. Good condition, located Colorado Springs, Colo. Price right. Box 362-SS.

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THREE TYPE A BUCYRUS-ERIE STEAM SHOVELS. Good value. $500 each.

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20-B BUCYRUS-ERIE STEAM SHOVEL with 36-foot dragline boom. Machine No. 4145.

BUCYRUS-ERIE GAS + AIR CRANE with 40-foot boom, ¾-yard Page Dragline bucket. Fairleads and shovel boom, no dipper stick. Machine No. 4347.

TYPE B BUCYRUS-ERIE High Lift Steam shovel. Machine No. 3110.

Box 373-SS

TYPE B BUCYRUS-ERIE COMBINATION HIGH LIFT STEAM SHOVEL, 19-foot 8-inch boom, 16-foot dipper handle, ¾-cubic yard dipper, power boom hoist and 36-foot boom clamshell equipment complete. Located central Indiana. Price as is, f.o.b. present location $2,000. Box 311-SS.

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FOR SALE OR RENT
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This machine should be an excellent purchase at the price offered, for quarry or slag bank operation. Box 212-SS.

INSLEY ½-CUBIC-YARD SHOVEL, full-revolving. Shop number about R-200 (2 years old). Machine in excellent condition. Has had best of care. Located in Wisconsin. Box 238-SS.

20-B BUCYRUS-ERIE STEAM SHOVEL, serial number 4000; caterpillar mounted; 18-foot boom, 12-foot 6-inch dipper handle, 1-yard dipper; shipped new in 1923; located western Missouri. Bargain. Box 241-SS.

P. & H. MODEL 206 Gasoline Combination Shovel and Clamshell machine. Good condition. Located vicinity Chicago. Box 336-SS.

THEW "O" ¾-cubic-yard gas shovel rebuilt 1931 and mounted on new center drive "cat". Box 343-SS.

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Small Draglines
Under 2 Yards

BUCYRUS-ERIE TYPE D-2 DIESEL DRAGLINE, shop number 5055, 45-foot boom and 1 cubic-yard Page Class "M" drag bucket. Located Eastern Missouri. Priced to sell. Box 166-SD.

30-B BUCYRUS-ERIE DIESEL DRAGLINE with 40-foot boom and 1-cubic-yard bucket located in Alabama. Box 91-SD.

P & H MODEL 700 DRAGLINE; number 2894 equipped with a 50-foot boom, light 1½-cubic-yard drag bucket, electric light plant, and powered with 4-cylinder Atlas Diesel engine. About 2½ years old. Box 189-SD.

ONE-YARD OSGOOD gasoline combination Dragline-Shovel-Clamshell. Overhauled late in 1931. Six cylinder Beaver motor. Bargain price. Box 323-SD.

BUCYRUS-ERIE E-2 DIESEL DRAGLINE, caterpillar mounted, 50-foot boom, 1¼-cubic-yard Omaha bucket, Kohler lighting plant. Machine was new in July 1930 and has been used less than 6 months. 243-SD.

FOR SALE

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Small Draglines
Under 2 Yards
Continued

KOEHRING MODEL 1 GAS DRAGLINE 40-foot boom and Page M ¾-cubic-yard bucket. Good operating condition. Box 374-SD.

FOR SALE OR RENT

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Under 2 Yards

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2 Yards and Over

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Monighan Track Type Dragline; 72-foot boom, 2½-cubic-yard Omaha bucket; Almost new Page Diesel engine; Machine now working northern Illinois. Priced to sell. Box 305-LSD.

50-B STEAM SHOVEL, new March 1927. Shop number about 4950. Has 26-foot boom, 17-foot dipper handle and 2-cubic-yard dipper. Priced to sell. Box 240-LSD.

For Sale or Rent

ONE CLASS-14 STEAM DRAGLINE excavator Number 3327 60-foot boom, 2-cubic-yard bucket, caterpillar mounted, equipped for burning gas or oil. Price very reasonable. Located at Turkey Creek, La. Box 111-LSD.

175-B STEAM SHOVEL No. 4090, equipped with 75-foot boom, 48-foot dipper handle and 3½-cubic-yard dipper. Machine is in very good condition. Oversize boiler. Box 148-LSD.

If You Do Not Find What You Want Listed—Write Us

The Excavating Engineer

South Milwaukee,, Wis.

BUCYRUS-ERIE SHOP REBUILT 100-B STEAM SHOVEL; shop number 4890; 29-foot 6-in. boom; 20-foot handle; three-cubic-yard dipper. Can be inspected at So. Milwaukee, Wis. Priced to sell. Box 187-LSD.

TWO REAL BARGAINS

2—BUCYRUS-ERIE 50-B STEAM SHOVELS, shop numbers 5109 and 9957. There is also available one set of 50-foot boom dragline equipment without bucket. Box 360-LSD.

MONIGHAN STEAM DRAGLINE, with 122-foot boom, 3½-cubic-yard bucket, mounted on skids and rollers, located southeastern Iowa. Box 367-LSD.

35-C STEAM SHOVEL, on caterpillar mounting, caterpillars in good condition, price $2,500. Located near Hazelton, Pa. Box 163-LSD.

175-B BUCYRUS STEAM SHOVEL, equipped with 75-foot boom, 48-foot dipper handle and 4-yard dipper. Machine located near Pittsburg, Kansas, and can be inspected at any time. Condition good; price open. Box 118-LSD.

2½-YD. DRAGLINE

Class 220 Page Dragline; 100 H.P. Charter-Horizontal Twin Cylinder engine; 72-foot boom; 2½-cubic-yard Page bucket. Located Northwestern Indiana. Box 200-LSD.

50-B STEAM SHOVEL, Number 3946; equipped with 1½-cubic-yard dipper, 26-foot boom, also 1½-cubic-yard dragline bucket with 50-foot boom caterpillar mounted, equipped for burning oil, located at Texarkana, Ark. Price very reasonable. Box 112-LSD.

For Sale or Rent

ONE CLASS-14 STEAM DRAGLINE excavator. Number 3402, 70-foot boom, 2-cubic-yard bucket, caterpillar mounted, equipped for burning gas or oil. Priced very reasonable. Located at Grand Prairie, Texas. Box 110-LSD.

68-C BUCYRUS ELECTRICALLY OPERATED SHOVEL, equipped with 2½-yard manganese front dipper, 3 phase, 60-cycle, 440-volt motors, transformers, cable reel and approximately 1400 feet of cable, all in excellent condition. Reasonable price. Address Box 268-LSD.

6-YD. SHOVEL

BUCYRUS-ERIE 320-B electric shovel, Ward-Leonard control, 3 phase, 60 cycle, 2300 volts, equipped with 6-cubic-yard dipper, 35-foot boom and 58-foot handles. Is in good condition and may be inspected in operation. Reasonably priced. Box 279-LSD.

CLASS-24 STEAM, OIL-BURNING DRAGLINE. 100-foot boom. Have also supply of new parts, including 600 new gum rollers. Reasonably priced, subject to buyer's inspection at Chelan, Washington, Box 51-LSD.

3-YD. SHOVEL

BUCYRUS 78-C, caterpillar mounted; three-cubic-yard dipper; shop number 3611. Boom rebuilt last year. Equipped with new 103-C boiler and will pass boiler inspection in any state. Shovel is in very good condition and is in operation at present time. Box 326-LSD.

50-B BUCYRUS-ERIE ELECTRIC SHOVEL, equipped with 3-phase A. C. current, 550 volts, 60 cycle and has three motors. New Manganese steel dipper. Located South Carolina. Box 226-LSD.

50-B DIESEL DRAGLINE; equipped with 50-foot boom, electric light plant, mounted on "cats." Located Vincennes, Indiana. Can be seen at any time. New August 1927. Box 78-LSD.

225-B OWNERS

You may be interested in a partial Bucyrus-Erie 225-B steam shovel located in Kentucky coal fields as a source of spare parts. No reasonable offer refused. Box 211-LSD.

FOR SALE

Address all box numbers c/o The Excavating Engineer at South Milwaukee, Wisconsin

Large Shovels and Draglines
2 Yards and Over
Continued

DIESEL-ELECTRIC DRAGLINE

Class 14 Diesel electric dragline Shop Number 5079, new fall of 1927 with 70-foot boom, 2-cubic-yard bucket, and with extra 10-foot extension, western location. Box 296-LSD.

70-C BUCYRUS STEAM SHOVEL on Cats. Complete. In operating condition. Shop number 1712. Also one extra three-yard Manganese dipper. Chicago territory. Box 347-LSD.

BUCYRUS 320-B STEAM STRIPPING SHOVEL, shop number 4205, new in 1925, used less than four years. Located at Toronto, Ohio. Box 74-LSD.

MONIGHAN DRAGLINE MODEL T. 2-cubic-yard 60-foot boom located near Wichita, Kansas, where it is now working. About seven years old. Has recently been thoroughly overhauled. Box 180-LSD.

1 70-C BUCYRUS, 2½ or 3-yard dipper, on caterpillars. Steam. Box 183-LSD.

BUCYRUS 70-C, Shop number around 1500. Thoroughly overhauled. Good working condition. Eastern location. Box 299-LSD.

If You Do Not Find What You Want Listed—Write Us

The Excavating Engineer
South Milwaukee Wisconsin

70-TON STEAM SHOVEL mounted on "cats," caterpillars in good condition. Located near Hazelton, Pa. Box 162-LSD.

MARION MODEL 93 STEAM SHOVEL—Railroad Type, Serial No. 3775, equipped with 1⅝-inch chain, 5-yard dipper. A-1 condition, new dipper sticks and roof completely overhauled. Any reasonable offer will be entertained. Subject to prior sale and inspection. Location near Kansas City. Box 264-LSD.

What Do You Bid On a

70-C STEAM SHOVEL located near Marietta, South Carolina, where it completed a railroad job? Bargain as supplementary shovel or as supply of spare parts.

88-C STEAM SHOVEL located in Kansas. Carefully laid up after completing season's work. 3½-yard dipper. Fine condition. Any reasonable offer accepted. Box 52-LSD.

BUCYRUS 80-B STEAM SHOVEL, shop number about 3800; 2-cubic-yard dipper; 48-foot boom; 32-foot dipper handle. "Cat" mounted. Priced to sell. F.o.b. cars. Box 255-LSD.

TYPE 175-B ELECTRIC, No. 794 equipped with 87' shovel boom, 48' dipper handle, 3½-yd. bucket, and dragline equipment including 125' boom, and 3½-yd. bucket. This machine was recently reconditioned and is in good operating condition. Present location, Connecticut. Box 263-LSD.

CLASS-24 BUCYRUS-ERIE STEAM DRAGLINE, shop number 912; 115-foot boom, 3½-cubic-yard Page bucket. Florida location. Box 73-LSD.

SHOVEL FRONT END for 175-B Bucyrus-Erie 65-foot boom, 47-foot dipper sticks and 3½-cubic-yard dipper. Located in Ohio. Box 10-LSD.

Miscellaneous Equipment

SMITH 27-E PAVER, gasoline driven caterpillar mounted, bought new late in 1930. Has handled less than 40,000 yards of paving. Priced to sell. Located in Arkansas. Box 312-ME.

TWO 60 CATERPILLAR TRACTORS. Entirely rebuilt and in excellent condition. Located Chicago district. Priced right for quick sale. See them at once. Box 294-ME.

LOCOMOTIVES

8 **BALDWIN**, 17x24, straight drive standard gauge 45 ton locomotives, 54 inch boilers. Shop numbers from 32,750 to 34,611. Each one has passed State Boiler Inspection yearly. Boilers will stand cold water test of 240 lbs. At present in actual service in Minnesota mine.

2 **BALDWIN** Locomotives, 19x26, standard gauge, 6 wheel switching type, shop numbers 39534 and 39536. Box 152-ME.

4 **LA PLANT-CHOATE**, 6-yard, all-steel, dump wagons. Equipped with wide iron wheels. Price $200.00 each. Chicago territory. Box 349-ME.

For Sale or Rent

Two 40-ton, 6-wheel switchers. Recently overhauled and rebuilt. Two 50-ton, 6-wheel switchers. In excellent condition. Location Chicago. Box 306-ME.

USED EQUIPMENT including 1 launch, 10 trucks, 7 tractors, 10 graders, 2 snow plows, 2 sweepers, 3 boilers, 2 rollers, 2 loaders, 2 gas motors, 2 oil distributors and 3 tanks. This equipment is located at Gold Beach, Klamath Falls, Salem and La Grande, Oregon. Bids will be received for the purchase of all or any part of this equipment. The launch for sale is the 40 H.P. gasoline powered, gas screw "VEGA" located at Gold Beach; rated 13.26 gross tons; register length 40.5 ft.; breadth 10.0 ft.; depth 3.6 ft. Box 351-ME.

DUMP CARS

6—8-yard Western—36-inch Gauge—2-way side.

LOCOMOTIVES

1—15-ton, 10x14—36-inch Gauge—Vulcan Saddle Tank.
2—21-ton, 11x16—36-inch Gauge — Vulcan Saddle Tank.

BOILERS

1—100 h.p. Locomotive Type for 70-C Bucyrus shovel.
1—32 h.p. Locomotive Type Stationary.

Box 181-ME

KIESSLER CLAMSHELL BUCKET, One 1½-cubic-yard; used only 90 days. Price $275.00. Box 298-ME.

STRIPPING PROPERTIES

Prospected, Appraised, Examined, Development Planned, Reports
RANDOLPH-PERKINS COMPANY
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LOOK AT THESE OFFERS

2—**MOTORS**, type KTR-3958, 8 pole, 21.5 HP, 900 RPM. Form GA- 440 V., 3 phase, 60 cycle, 160 amp. maximum torque 350' lbs. (5 min. 55°C) totally enclosed ball bearing, Model Number 74A157.

2—**BLOWERS**, Type CW, top horizontal discharge No. 75, Design No. 2, silent vane fan for continuous service, delivery to 7500 RPM direct connected to motor KT-946, 5-HP., 440 Volts, 3 phase, 60 cycle.

1—**MOTOR**, Type KTP-553-Y, 2 pole, 90 HP. 1500 RPM. Form E, 550 Volts, 3 phase, 25 cycles, 87 amp. speed full load 1440, Model No. 120312, serial No. 4523903.

2—**11"x11"x12" WESTINGHOUSE AIR COMPRESSORS.**

1—**MOON 1 KW TURBO GENERATOR LIGHTING PLANT.**

1—**50KW MOTOR GENERATOR SET.** Induction Motor, Model No. 10059, type KT 347-6-75-1200. Form B, 3 phase, 60 cycles, 440 volts, 93.5 amps. speed full load 1170 RPM. No. 4405940, 75 HP. Continuous, connected to:

GENERATOR—Serial No. 1359597, Compound wound, Form A, Type RC-35, Amps. 200, volts no load 250, speed 1200 RPM. Volts full load 250, 50KW Continuous. Mounted on Sub Base. With suitable rheostat and compensator.

1—**GENERATOR** Westinghouse 125 KW-250 Volts—500 Amperes, 440 RPM. DC-Generator, Serial No. 4,992,129 with two outboard bearings.

Box 372—ME

1—**REBUILT SPUR GEAR CAT. MOUNTING**, suitable for application Type B or B-2 Machines. Factory guarantee.

3—**LOCOMOTIVE BOILERS** 44"x17' 75 H. P. Under forced draft. 125 pounds working pressure, 393 sq. ft. heating surface. Heavily built for Railroad Shovel service.

1—**PAGE "C" 1-CUBIC-YARD DRAGLINE BUCKET.**

Box 332-ME.

COMPLETE CONTRACTORS EQUIPMENT

Offered for sale by Southern contractor. Priced to sell.

For further particulars, Address Box 138-ME.

7—Railroad Type Steam Shovels 2½ to 5 yd.
3—Full Revolving Shovels ¾ yd.
1—Gasoline Clamshell Crane ½ yd.
2—Jordan Spreaders
2—Locomotives, 26 Ton, American Saddle Tank
32—12-yd. Western Heavy Duty Dump Cars
3—Camp Cars
1—Flat Car
2—1-bag Gasoline Concrete Mixers
Pumps, Boilers, Jacks and Other Tools

FOR SALE

Address all box numbers c/o The Excavating Engineer at South Milwaukee, Wisconsin

Miscellaneous Equipment
Continued

1—Whitcomb 9-ton gas, thirty-six-inch gauge locomotive.

5—5-yard Continental dump cars.

Box 310-ME

COMPLETE EQUIPMENT for 2 strip mines, contractors or quarry operations, No. 300 and No. 36 Marion steam shovels, well drills, locomotives, cars, crushers, picking tables, loading booms, cable and button retarders, compressors, motors, transformers, flood and search lights, camp equipment and new repair parts for above. Box 195-ME.

40-FOOT BOOM CLAMSHELL EQUIPMENT COMPLETE, including ¾-yard Blaw Knox rehandling Bucket, suitable for application to Type B or Type B-2 Erie steam shovel. Equipment used only one season. Located central Indiana. Box 327-ME.

HIGHLIFT SHOVEL EQUIPMENT for Bucyrus-Erie Type 1030 machine. Has been used less than one year and is well stored at South Carolina point. Any reasonable offer considered. Box 242-ME.

EVERY ONE A BARGAIN

1—STEAM ENGINE—12½"x16" link reverse for Railroad Shovel.

1—"LITTLE TUGGER" STEAM HOIST ENGINE No. 1-H5—2½ H. P. (Ingersoll Rand—Form 4333 Page 16).

18—BRAND NEW 75 H.P. 7"x8½" STROKE. 4 CYLINDER ATLAS DIESEL ENGINES. Non-reversible. Complete with auxiliary air compressor and fuel tank. Will sell without auxiliary compressor and fuel tank.

3—4½"x5" REVERSIBLE STEAM ENGINES—20.8 H.P. at 400 RPM. Normal running speed at 100 pound steam pressure.

1—4¾"x5" REVERSIBLE STEAM ENGINE—23.2 H. P. at 400 RPM. Normal running speed at 100 pound steam pressure.

2—5"x5" REVERSIBLE STEAM ENGINES—25.6 H. P. at 400 RPM. Normal running speed at 100 pound steam pressure.

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December Advertisers

Allis-Chalmers Mfg. Co., Industrial Tractors Division	585
American Steel & Wire Company	589
Blaw-Knox Company	559
Broderick & Bascom Rope Company	586
Bucyrus-Erie Company	2nd and 4th Covers
Bucyrus-Erie Company, Specialty Dept.	584 and 588
Bucyrus-Monighan Company	554
Caterpillar Tractor Company	579
For Sale Advertisements	592 to 596
General Electric Company	558
Haiss Manufacturing Co., Inc., George	588
Harnischfeger Corporation	580
Hayward Company, The	582
Hazard Wire Rope Company	582
Hercules Powder Company	555
Ingersoll-Rand Company	3rd Cover
Koenig Labor Agencies	589
Leschen & Sons Rope Company, A.	577
Linn Manufacturing Corporation	587
Loadmaster	583
Loomis Machine Company	578
Nordberg Mfg. Company	578
Positions Wanted Advertisements	592
Roebling's Sons Company, John A.	581
Taylor, S. G., Chain Company	553
Wellman Engineering Company, The	576
Western Wheeled Scraper Company	557
Wickwire Spencer Steel Company	556

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The Excavating Engineer

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Vol. XXVI DECEMBER, 1932 Number 12

THE EXCAVATING ENGINEER

FOUNDED 1905

Modern methods used at this Haverstraw Quarry of New York Trap Rock Corporation are described in article starting on page 561.

MOST FOR YOUR MONEY

ALL GOOD STEEL

BE HX AS CAST NORMALIZED LIQUID QUENCHED

BE YZ AS CAST NORMALIZED QUENCHED SOFT QUENCHED HARD

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Your profits depend largely on the mat under the paint of your excavator. The c and structure of every part should be e suited to the stresses, wear and shock exp during its lifetime. No one steel will serv all. Hence you find steel alloyed with va percentages of manganese, chrome, ni molybdenum or other materials. Aside composition, variations in heat treatment produced entirely different structures machines built by reputable manufact undoubtedly each part will be all good ste

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For the answer the experienced buyer con the builder's experience, his facilities for ing and treating his castings, for analyzin testing his steel, the record of his machine dependability and long life.

In Bucyrus-Erie balanced value you ge right steel in the right place. Large, m foundries, big annealing furnaces, an up-t heat-treating plant, a splendidly equipped metallurgical laboratory, the research of cialists whose life work has been the stu steel as employed in the building of excav machinery . . . all these work together t you the benefit of Bucyrus-Erie's fifty-two of experience in building over 11,000 de able excavators.

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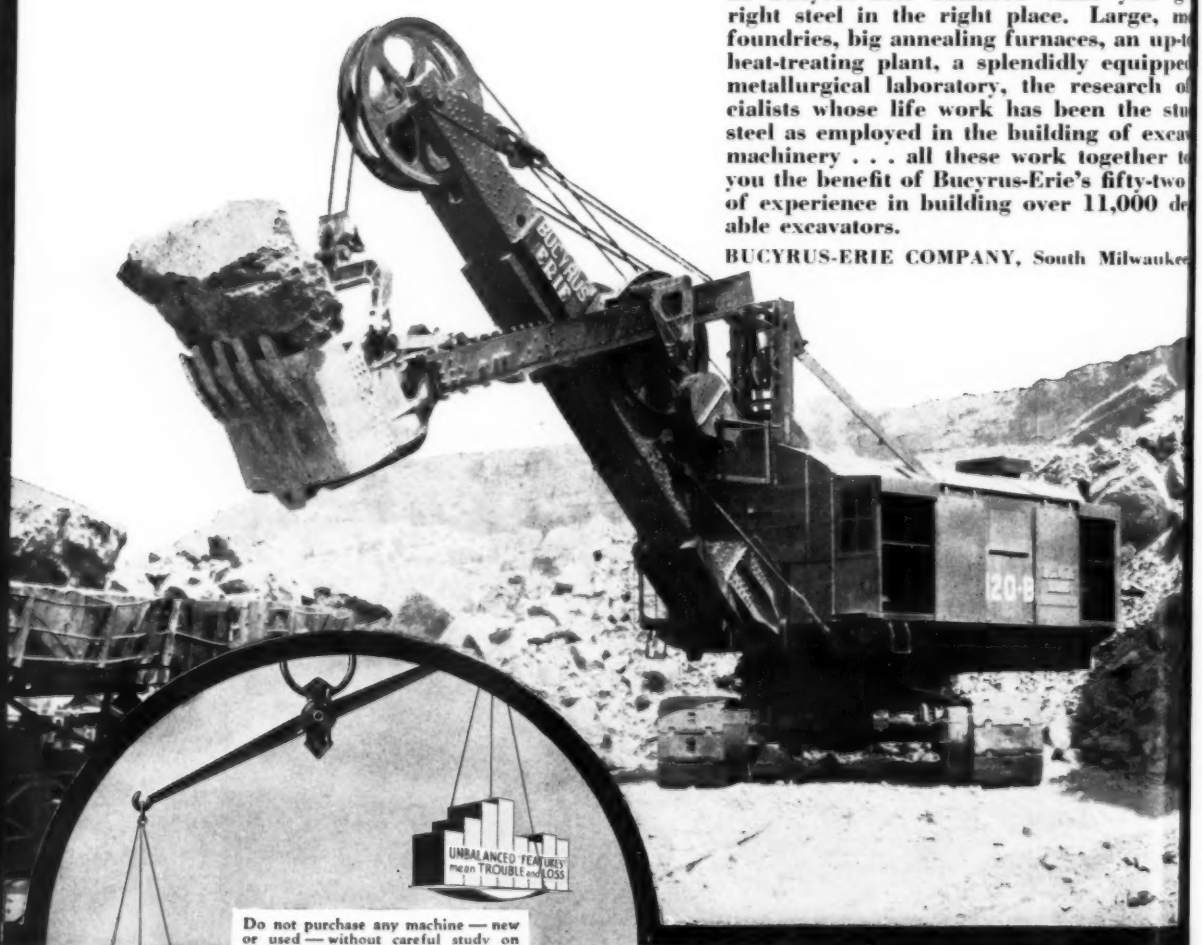

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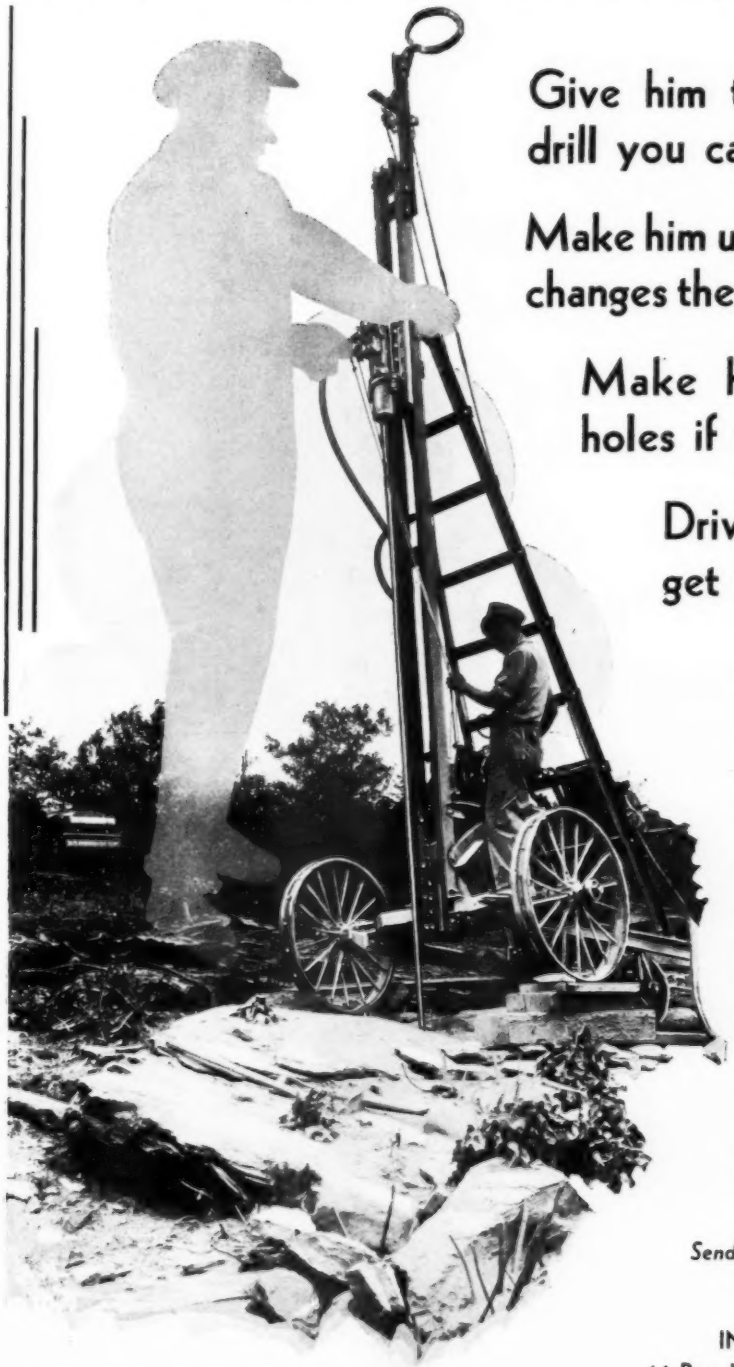

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In this Mechanical Age the counterpart of the mythical giant is the WAGON-MOUNTED DRILL.

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Send for illustrated Form 1975. It contains performance data and blue prints

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... fewer delays

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